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FIRE ENGINEERING

The Journal of the Fire Protection Profession Since 1877

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NOVEMBER, 1944

Vol. 97, No. 11

land's Worst Disaster
Article on Page 795)

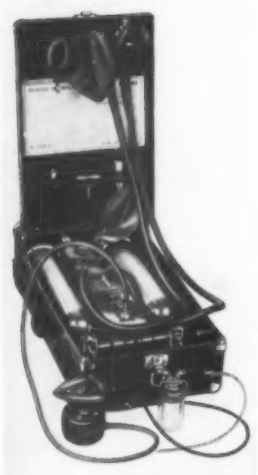
A CASE - SHEPPERD - MANN PUBLICATION

Can you afford to be without a good resuscitator?

Every Chief must answer this question for himself

EMERSON

RESUSCITATORS—



are the logical choice of leading fire departments as well as hospitals and large industrial plants everywhere. In preventing unnecessary death from smoke suffocation, carbon monoxide poisoning, shock or drowning, Emersons take the lead for simplicity in operation and dependability in action.

You, Chief, must be sure! When lives are at stake—be ready not only with a resuscitator but the best obtainable—buy an EMERSON.

Write for literature or an actual demonstration.

J. H. EMERSON COMPANY

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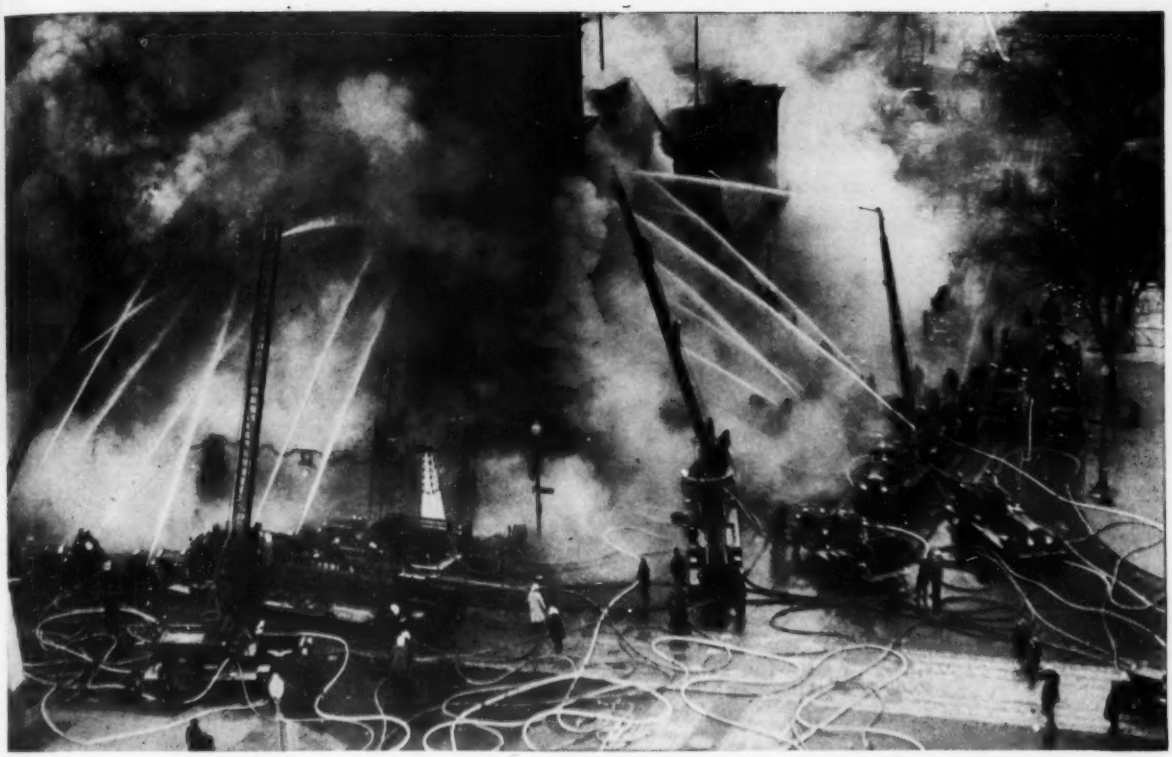
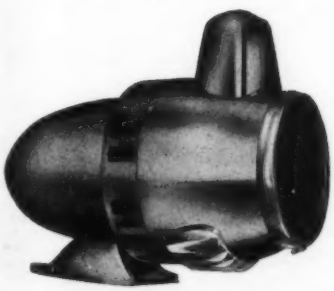


Get There... Safely



A FEDERAL Siren that combines a powerful tone and a brilliant oscillating red light.

WITH FEDERAL SIRENS

Making a fast start to a fire isn't enough—it is equally important to get there safely in the shortest possible time. That is where FEDERAL Sirens come into efficient use. They offer the utmost in audible signals to which may be added visible warning, if desired.

The tone roar of FEDERAL Sirens is distinctive, piercing, and powerful. It draws instant attention far ahead of fast moving apparatus. FEDERAL visible warnings are of two types—a flashing light and an oscillating light. These brilliant red beams are unusually effective for warning unwary motorists and pedestrians.

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FIRE ENGINEERING

A Consolidation of Fire and Water Engineering, The Fire Engineer and Fire Protection

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FRED SHEPPERD
Editor

ROI B. WOOLLEY
Assistant Editor

Remember 'Way Back When?

THERE have been many improvements in fire fighting since the days of the old "jumper" and "three-hoss hitch".

● Looking back over the years through the pages of FIRE ENGINEERING, it is interesting to observe how these improvements in techniques and equipment were first made known through the pages of this publication.

● No one knows exactly what tomorrow will bring, but every reader of this publication knows that whatever develops in ideas, theories, practices and equipment in the fire service, FIRE ENGINEERING will bring him the entire story—and bring it to him first!

● It is this conviction that inspires readers to absorb the advertising no less than the editorial contents of every issue.

The Publishers

FIRE ENGINEERING

The Journal of the Fire Profession since 1877; published on the fifteenth of each month by Case-Shepperd-Mann Publishing Corp., 24 West 40th St., New York 18, N. Y., also publishers of *Water Works Engineering, Sewage Works Engineering*, etc. ¶Subscription price U. S. and Latin America, $2.50 a year; Canada, $3; Foreign, $3.50; Single copies, 25c. ¶Member of Audit Bureau of Circulations and Associated Business Papers, Inc. ¶Entered as second-class matter April 15, 1929, at the Post Office at New York, N. Y., under Act of March 3, 1879.

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YOU GET ACTION — FAST! This small town hotel is typical of the type of structures to be found in rural communities. Many are located far away from water supplies—far away from low-pressure pumpers. As the FMC High-Pressure Fog Fire Fighter travels fast and carries its own water supply, it knocks down a fire quickly.

IT'S THE PRESSURE AND THE PUMP!

FAMOUS FMC *High-Pressure* PUMP BUILT BY BEAN

This is the wonder pump that has revolutionized fire-fighting technique. It has proved its ability to maintain 800 lbs. pump pressure—600 lbs. nozzle pressure—at hundreds of fires. It has got "what it takes" to do its job and to carry through.

YOU GET THE REAL "BLASTING" FIRE-KILLING FOG WITH THE FMC HIGH-PRESSURE FOG FIRE FIGHTER

In fighting fire with fog—*you must have high pressure.* And that's what you get with the FMC Fog Fire Fighter.

The FMC High-Pressure Pump easily delivers and maintains *800 lbs. pump pressure* — better than *600 lbs. nozzle pressure.*

This high pressure gives you a combination of high velocity and finely-atomized fog—just what you need to *cool* and *smother* flame. Every droplet of water is broken up into thousands of tiny particles that can be *"blasted"* into the source of the fire.

One gallon of this finely-atomized fog—properly used—has the fire-quenching possibilities of many times that of low-pressure water.

Furthermore — the high-pressure fog quickly turns into steam, causing *little or no water damage.*

Investigate! Get the facts about this new and revolutionary fire-fighting technique. FMC High-Pressure Fog is the greatest contribution ever made to fire fighting.

Right now—the Armed Forces are taking most of the production of FMC High-Pressure Fog Fire Fighters. But — you should be ready to modernize the moment civilian needs can be met. Start planning—*now!*

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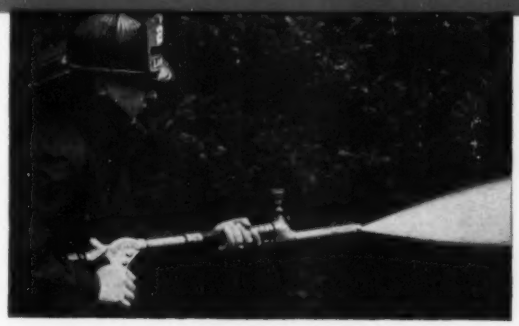
FIGHT FIRES THE MODERN WAY WITH FMC HIGH-PRESSURE FOG



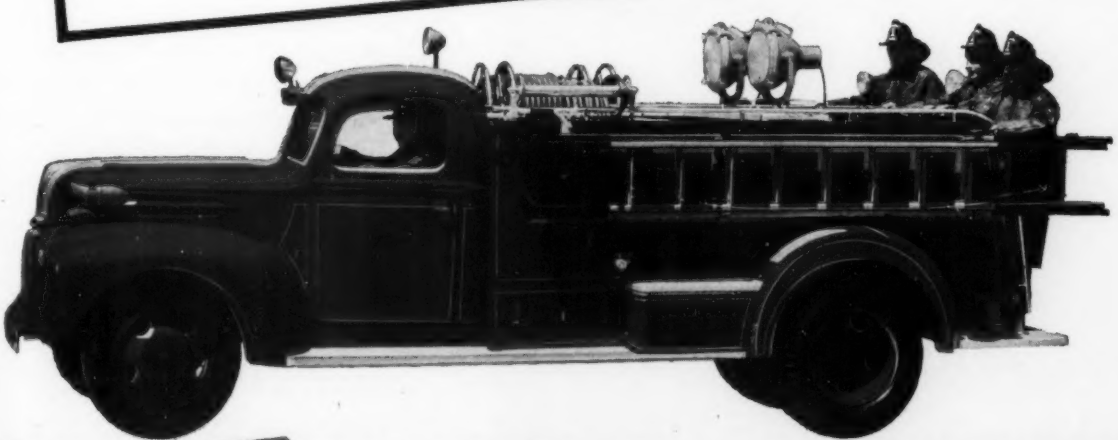
FMC FOG FIRE GUN IN ACTION! Fireman above is holding trigger release with his right hand and adjusting barrel with his left hand. By turning the barrel slightly, he can change the flow from a straight stream to a wide fog pattern, for close-up work.

A ONE-MAN JOB! With pressure on, the FMC Fog Fire Fighter practically carries itself and can be poked into cellars, attics or holes in partitions. If the fire is intensely hot, it is possible to use the protecting spray nozzle to protect your face from the heat.

ONLY THE FMC HIGH-PRESSURE FOG FIRE FIGHTER PACKS THE NEEDED PUNCH TO PRODUCE AND MAINTAIN 800 LBS. PUMP PRESSURE — 600 LBS. GUN PRESSURE.

INVESTIGATE! THERE'S NOTHING ELSE LIKE IT!

STANDARD FMC FOG FIRE FIGHTER. *A self-contained fire-fighting unit. Carries its own water supply and complete fire-fighting equipment. Provides two guns of 30 gallons each at 600 lbs. nozzle pressure. Tested and proved at hundreds of town, rural and airport fires.*



FMC *Original* HIGH-PRESSURE FOG FIRE FIGHTER

CAN BE MOUNTED ON MOST STANDARD TRUCK CHASSIS

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It's Safer—It's Modern

C-O-TWO is the registered trade mark and corporate name of this company. Hand Portables, Wheeled Hose Units and Systems are inspected and labeled by the Underwriters' Laboratories and Factory Mutuals.

C-O-TWO FIRE EQUIPMENT COMPANY
NEWARK 1, NEW JERSEY

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Today historic Baltimore, with over a million population, is a center of many vital war industries.

She *must have the finest of fire-fighting equipment.*

Based on her long experience with Mack Fire Apparatus, Baltimore has chosen this new 750-gallon Triple Combination Pumper.

Five just like it have been ordered by that great American city.

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Mack
FIRE APPARATUS

If your community needs additional fire-fighting equipment or replacements, think of Mack. Remember, Mack Fire Apparatus is backed by the greatest engineering resources in the industry.

ARMY E NAVY

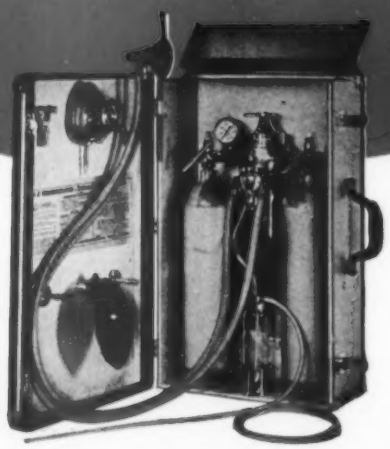
IF YOU'VE GOT A MACK, YOU'RE LUCKY... IF YOU PLAN TO GET ONE, YOU'RE WISE!

It will help you if you will mention FIRE ENGINEERING *when writing advertisers*

RESULTS at Lansing, Mich.

Win Decided Preference for The E & J RESUSCITATOR INHALATOR and ASPIRATOR

FIRST CHOICE IN FIRST AID



The Lansing Fire Department purchased its first E & J Resuscitator in June 1938. The results were so satisfactory a second E & J machine was added two years later—in September 1940.

Records of the Department show that during the six-year period from July 1, 1938 to June 30, 1944, the Emergency First Aid Squad responded to 852 calls requiring use of this resuscitation equipment. Of these cases, lives saved totalled 565 or 66%. When it is considered that in many cases the patient was dead upon arrival of the Squad, the record of life saving speaks highly for the Lansing Fire Department and its E & J Resuscitators.

In determining the value of mechanical resuscitation equipment, nothing takes the place of long experience. That's one of the reasons the E & J is so widely preferred the country over.

★ ***For further information write to any of our distributors listed below.*** ★

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Pioneers and Specialists in Mechanical Artificial Respiration

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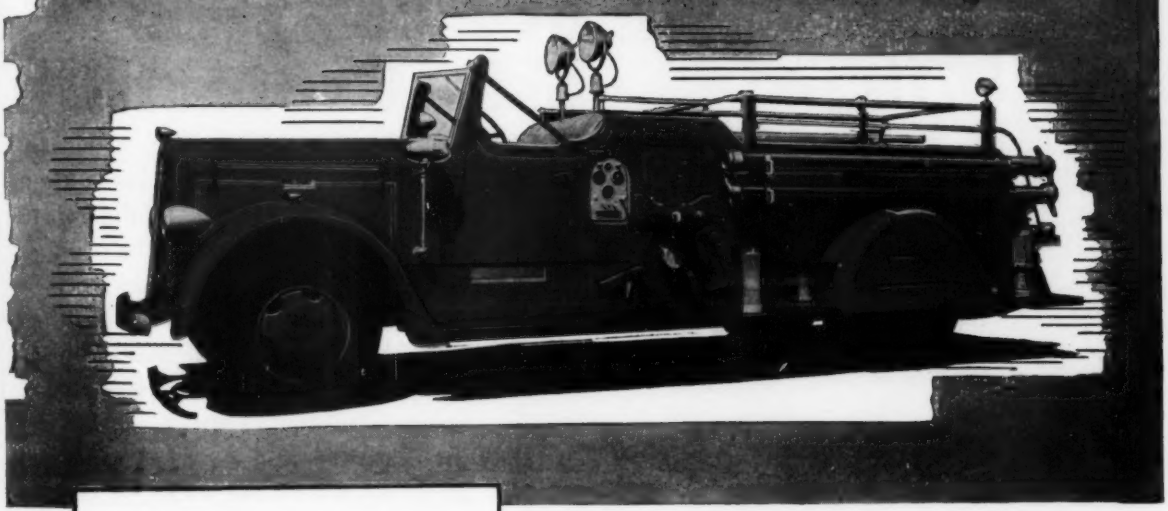

QUICK FACTS

(About Model 75T*, Illustrated)

Overall Length: 23 ft. 6 in.

Weight (no load): 11,600 lbs.

Cylinders: 6

Wheelbase: 174 in.

Turning Radius: 30 ft.

Horsepower: 150

Pump: 750 G. P. M.

Hose Capacity:
1200 ft. 2½ in. hose
400 ft. 1½ in. hose

Booster Tank: 250 gals.

*Subject to W.P.B. Limitation Order L-43, under which certain models may be ordered only for postwar delivery

The Volunteer Fire Department at Floral Park, L. I., N.Y. has an exact and practical knowledge of the fire-fighting needs of the community it serves. It should, for the average member has well over ten years of service to guide him, and several are still active after twenty-five years. Supplementing their practical experience in fighting fires, all members are constantly trained in the use of the most modern methods and equipment.

On three separate occasions, these practical people have found the exact fit for their requirements in Ward La France Pumpers. You can, too, whether yours is a large city or a small town — whether you have formulated an exact set of specifications, or want the seasoned experience of a staff of fire equipment engineering specialists. Because of the completeness of a Ward LaFrance,* the advantages of equipment engineered to the job usually entails little or no additional cost. Write

WARD LAFRANCE TRUCK DIVISION
GREAT AMERICAN INDUSTRIES, INC., ELMIRA, N. Y.

GAI

WARD LAFRANCE

In the gas-filled mine, Scott Air-Pak will help in emergency repairs, in rescue missions.

Firemen will depend on Scott Air-Pak to enter smoke-choked structure.

Repairing and cleaning foreign oil will be made safer, more efficient with Scott Air-Pak.

Preview

# of Post-War Life-Protection

★ Fliers whose missons carry them upwards of 6 miles into the stratosphere literally "travel on their lungs." And Scott ***Air-Pak*** (Portable Oxygen) Equipment enables them to carry on their duties with continuous respiration protection. Commonly called "walk around bottles", Scott Air-Pak units provide the requisite oxygen for the intervals when the mask is disconnected from the main oxygen line, and for emergency service when the main oxygen supply is destroyed in combat.

A combat necessity! Yet inherent in Scott Air-Pak equipment are the safety principles, the design, the practical know-how which point to important industrial applications in days to come. Plans are already in the making! Look to Scott for tomorrow's portable oxygen equipment.

Scott Air-Pak Unit—a light-weight, portable oxygen cylinder and precision regulator of the demand type —in active service on many fronts.

SAFETY EQUIPMENT DIVISION

ARMY (E) NAVY

Scott

AVIATION CORPORATION

Lancaster, N. Y., U. S. A.

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SAFE

ON HIGH VOLTAGE

A STREAM THAT RESISTS CURRENT

Safe on high voltage . . . Excellent for flammable liquids . . . Highly efficient on fires in ordinary material . . . Effective for cooling . . . Protects hose men from fire . . . Absorbs smoke and fumes . . . No adjustments . . . Rugged construction . . . Simple in operation . . . Ample water capacity!

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Write for illustrated literature and results of Electrical Tests with . . .

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ELMIRA, N. Y.

NEW DESIGN
Plus
NEW FEATURES

MODEL D21

FIRE ALARM

Manufactured by

SOUTHERN SWITCH & SIGNAL COMPANY

FASTER, 25 per cent quicker delivery.

POSITIVE, non-interfering and successive type circuit.

IMPROVED, scientific designed gear train.

INTERCHANGEABILITY of all parts.

SMOOTH, even, correct timing.

ALARMS delivered over broken and grounded circuits.

IMPROVED, streamlined magnesium aluminum alloy case.

CASE and door heat-treated for added strength.

ANODIZING of all aluminum parts insures long life finish.

INSULATION of high die electric strength.

IMPROVED large terminal box.

STANDARD size case can be readily mounted on existing pedestals and pole attachments.

PLEXAGLASS covers used throughout.

CIRCUIT positively closed when main spring runs down or breaks.

LOW first cost.

If you are interested in this new product, write today for additional information about it—without obligation.

Is there

ADEQUATE FIRE ALARM PROTECTION

In your city's residential sections?

The Destructive Power of FIRE Can Be Reduced in Ratio to the Effectiveness of the FIRE ALARM SYSTEM Employed

In the year 1943, there were more than 700,000 fires in America—more than $350 million worth of property destroyed.

Many of these fires originated in congested residential sections where an inadequate alarm system caused alarms to be delayed. Better fire prevention can, and must be, achieved to combat this menace to life and property. The greatest aid is proper distribution of alarm boxes so there will be fewer delayed alarms—less chance for a fire to do untold damage.

For more than 20 years this company has manufactured fire alarm systems for communities, large and small. Your inquiries will be quickly acknowledged.

SOUTHERN SWITCH & SIGNAL COMPANY

SHREVEPORT, LOUISIANA

"There Is No Substitute for Experience"

AKRON MULTIVERSAL DECK PIPE

FOR PERMANENT INSTALLATION on FIRE APPARATUS TRUCKS or FIRE BOATS • in INDUSTRIAL PLANTS

Style 506 with separate handwheel control for both elevation and rotation.

Style 505 is made with handwheel control for elevation only. Although not provided with handwheel control for close adjustment, it is easily rotated by hand.

Style 508 with lever handle for elevation and rotation adjustment.

Style 507 without controls. Rotation and elevation adjustment by hand.

Base threaded or provided with flange connection.

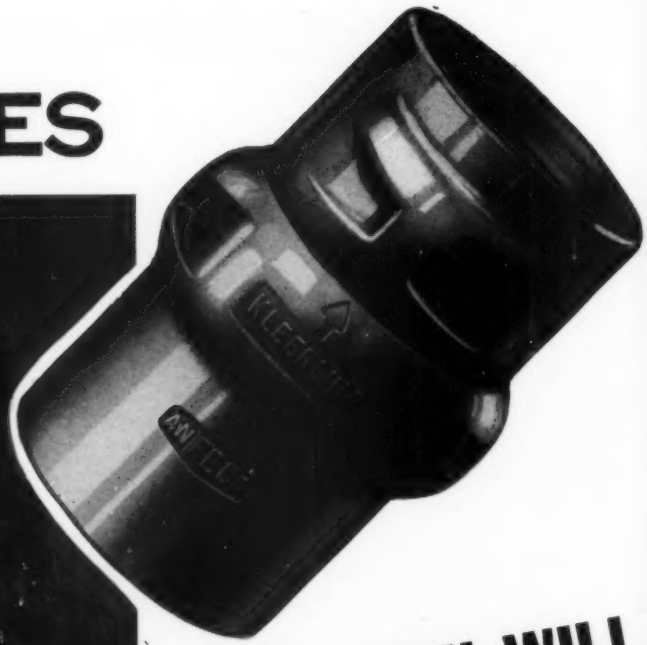
Design and construction assures efficient operation with minimum pressure loss due to friction.

Capacities from 600 to 6000 G. P. M.

AKRON BRASS MFG. COMPANY, Inc. WOOSTER, OHIO

AKRON BRASS
FIRE FIGHTING EQUIPMENT

THERE ARE TIMES



WHEN YOU WILL BE THANKFUL YOU SPECIFIED

KLEERLINE COUPLINGS

Have no pin lugs to catch in ladders, they're *streamlined* to glide smoothly over *any obstacles* and they can't cut or wear holes in stacked hose.

Easier and faster to couple up, too, and rugged enough to stand the hard knocks—made by a firm long established and specializing in precision manufacturing, assuring you one of the finest couplings money can buy.

You, Chief, specify KLEERLINE couplings for your fire hose and be forever thankful, too!

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Full information through your local dealer

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FASTER
STREAMLINED
BETTER
MODERN DESIGN

ANDERSON FIRE-FIGHTING EQUIPMENT COMPANY, INC.

407 WEST 36th STREET NEW YORK 18, N. Y.

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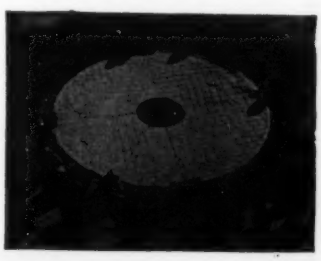
OF course, it's all in fun. Actually, no efficient department would ever forget a net—and every capable chief will insist on using a net or at least having it ready for instant rescue work. Look over your net today. Is it in good condition? If it's over 10 years old, better let us go over it for defects. There is always a chance of mildew or acid burns, etc. Plan on buying an ATLAS net at your earliest opportunity, PLAY SAFE.



Specify ATLAS on new apparatus

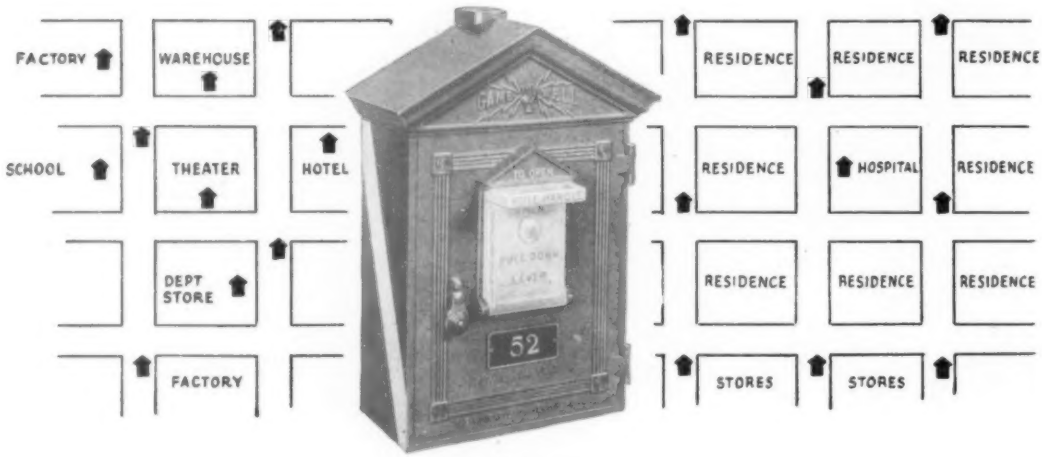
ATLAS SAFETY EQUIPMENT CO., Inc.

26 WARREN STREET ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ NEW YORK 7, N. Y.

ADEQUATE FIRE PROTECTION

Requires

A BOX AT EVERY FIRE HAZARD



THE STANDARD
MUNICIPAL FIRE ALARM BOX
THREE-FOLD TYPE

The Gamewell Company, since 1866, has specialized in the design, manufacture, engineering and installation of municipal signaling systems. More than 2000 municipalities in all parts of the world, many of the largest industrials and institutions, and — since the outbreak of war — more than 500 establishments of the Allied Nations are now protected by Gamewell systems.

Time is the Vital Element

When fire occurs a few seconds may mean the difference between a nominal loss and a conflagration.

Maintenance of business and income depends upon continuity of operations, and also — employment, personal property, home and family depend upon the security of business.

Years of progress may be nullified by a single delayed alarm.

You Can Help

By urging the installation of a fire alarm box at every fire hazard — this is essential protection.

Fire does not wait — it strikes without warning — and the most efficient fire department is helpless until the alarm is given. Use of the box saves time — brings immediate response of the department and minimizes loss.

CONFLAGRATION HAZARDS EXIST IN EVERY CITY
PROMPT ALARMS PROMOTE SECURITY

Individual problems given special attention — no obligation

THE GAMEWELL COMPANY

NEWTON UPPER FALLS 64, MASSACHUSETTS

FIRE ENGINEERING

NOVEMBER, 1944 VOL. 97. NO. 11

With the Editor

Misleading Misquotations! In October last, a Boston paper carried a news item headed "Twenty Year Supply of OCD Fire Trucks Poses Postwar Bay State Problem." The article carried the photograph of Boston's fire commissioner, William Arthur Reilly, and, although it contained only two quoted sentences attributed to the commissioner, it was so couched as to give him "credit" for the entire context.

In this writeup occurred such statements as these:

"The pumpers, take it from Boston Fire Commissioner William Arthur Reilly, are good equipment—equal in effectiveness to all but the most powerful 1,000-gallon pumpers on the most modern fire trucks.

"The fire truck business is nice business. If a salesman manages to sell only one or two a year he's earned very nice year's pay, according to popular reports.

"And a shiny new fire truck does things to any fire chief's morale.

"Consider the dismay, then, in the heart of your fire chief and fire equipment company at the prospect of this glut of inexpensive pumpers hanging over the market."

The commissioner is then quoted as saying:

"The pump is the heart of the fire truck. That's where the water comes from. . . . We are very glad to have them (the OCD pumps) as supplementary equipment."

The paper then continues—

"The pumps are 500-gallon-per-minute capacity but develop 700 gallons per minute. Commissioner Reilly believes they are as good as former 750 gallon pumps and inferior only to the very modern 1,000-galloners which would not be required in most fire departments anyway. . . .

"Some towns will buy the new fire truck anyway, regardless of cost. A new fire truck, like newfangled traffic lights, is something every town must have occasionally to keep up its prestige and morale.

"For example, Belmont last Monday, in a special town meeting, voted to buy a new $11,000 fire truck, despite opposition of some of its economy-minded citizens . . . who contended the purchase was unnecessary as long as the town possesses six brand new OCD 700-gallon pumpers.

"The pumpers are only part of nearly $7,000,000 worth of civilian defense equipment distributed to the state, cities and towns when Nazi bombers were expected momentarily. Now when the Nazis are busy defending the Rhine, the OCD office has folded up and the question is what to do with all this equipment."

Here is tacit proof of a situation against which FIRE ENGINEERING has been warning its readers for many months. This isn't the only case, but because of the prominence of the person quoted — and misquoted, we hasten to add—and of the city in question, it cannot be ignored. If such thinking is true in Boston, it can be expected in Brooklyn, Bangor or Boonville.

Only a day following publication of this item at the meeting of the Massachusetts Fire Chiefs Club in Boston, Commissioner Reilly emphatically and categorically repudiated the story and offered to send at his own expense a written denial to all fire chiefs in the area. He pointed out that Boston has always depended upon standard equipment, and always would; that it had several large standard pumpers now on order. At the same meeting, the Club unanimously authorized the promulgation of a formal resolution decrying any attempt to substitute war-emergency OCD fire fighting equipment for "standard" municipal types.

This, of course, helps. But it is not

enough. Every municipal fire chief and commissioner who has the courage of his convictions and knows whereof he speaks should do likewise.

Circumventing Civil Service The International Association of Fire Fighters at their annual convention in September adopted a resolution to "go on record as directing the Executive Board to oppose any future attempts to circumvent the recognized civil service practice in the fire department of the City of New York."

This resolution resulted from Mayor LaGuardia's recent attempt to appoint chief officers to the fire department in what is generally considered an illegal manner. In fact, the courts have since ruled that these appointments were not according to law, and were therefore null.

We feel that this action on the part of the Fire Fighters Association is most commendable. Nothing ruins the morale of the uniformed force more effectively than the interjection of irregularities into promotions.

Where promotions can only be earned through civil service examinations, each man feels that he has a chance to advance; each man feels that if he devotes himself to study and self-improvement he can qualify for the greater responsibilities of an advanced grade.

Remove this incentive by promoting men to higher positions without examinations, or contrary to established civil service rules, and you remove the incentive for men to improve themselves. Promise of reward is the force which impels men to put in long hours at conscientious study in preparation for advancement. Without this motive, a department becomes stale.

Test Underground Gasoline Tanks Many gasoline stations have been closed since Pearl Harbor, due to the draft, gasoline rationing and curtailment of motor car traffic. These idle stations mean empty gasoline storage tanks and corrosion thereof due to lack of maintenance.

When the war nears its end and manpower and gasoline again becomes available without restriction, most of these stations will be reopened. It is likely that many tanks will have become leaky in the interim.

Where such tanks are located in filled ground or sandy soil, leaks may prove a fire hazard. Upon filling the defective tanks, leaking gasoline may find its way underground to neighboring buildings located at lower levels. There are cases on record where gasoline has so travelled over one hundred feet, finally entering basement walls through defective masonry or through openings made to accommodate utilities' services.

As a safeguard against the development of this fire hazard, it is recommended that all idle tanks be given a pressure test before being again placed in service. Such a test will disclose any openings through which gasoline might escape.

Fred Shepperd

Cleveland Suffers Worst Fire Catastrophe in History

Unparalleled Explosion and Fire Bring Death and Destruction in Cleveland, Delaying War Effort

A STAFF REPORT

SHATTERING explosions and searing flames brought Cleveland its worst disaster on October 20, when the contents of liquid gas storage tanks at the plant of the East Ohio Gas Company exploded and spewed flaming death over a wide and thickly populated area leaving this picture—*

170 estimated dead.

73 unidentified dead buried in a common grave.

Many persons listed as missing.

Many injured still in hospitals, some in critical condition.

One-half square mile is completely devastated and evacuated of all shops, factories and homes; an estimated 3,600 persons made homeless — 10,000 temporarily evacuated from homes.

82 dwellings completely destroyed; probably 200 damaged; 4 industrial plants completely wrecked, 20 damaged (a majority working on Government contracts).

Property loss reported at $15,000,000.

A city whose every emergency resources were taxed to the limit.

Cause unknown but being investigated by nine different agencies.

*These data are based upon most authentic current information available but are subject to revision.

ON Friday, October 20, 1944, the hands of a clock in the compressor control house of the East Ohio Gas Company at 55th street and the New York Central railroad tracks, Cleveland, stopped at 2:40:48 P.M. At that moment all hell was loose in the area bounded by the railroad and E. 55th, E 61st and E. 62nd streets, including the plant, one of the most modern of its kind in the country for compressing and storing natural gas into liquid form and reconverting it to its natural state, as needed.

Liquid gas, believed to have escaped from one of four large storage tanks, had found its way into the plant grounds and beyond, vaporizing as it traveled, until some spark or flame ignited the highly combustible mixture causing a flashback and fire which quickly involved storage tanks and the plant itself.

Almost before the reported 80 or more gas company workers knew what was taking place, a terrific explosion in at least one of the tanks blasted out walls and flattened structures of the plant and enveloped the former in flames, killing or injuring practically the entire operating force. The liquid gas tanks became a gigantic "blow torch" and before fire forces summoned on a "jump" fifth alarm were on the way, dwellings, commercial, industrial and other structures were blazing over a wide area; panic-stricken men, women and children were fleeing for their lives, many with their clothing aflame. Fire was literally "raining out of the sky" and "it looked as though the whole world was afire."

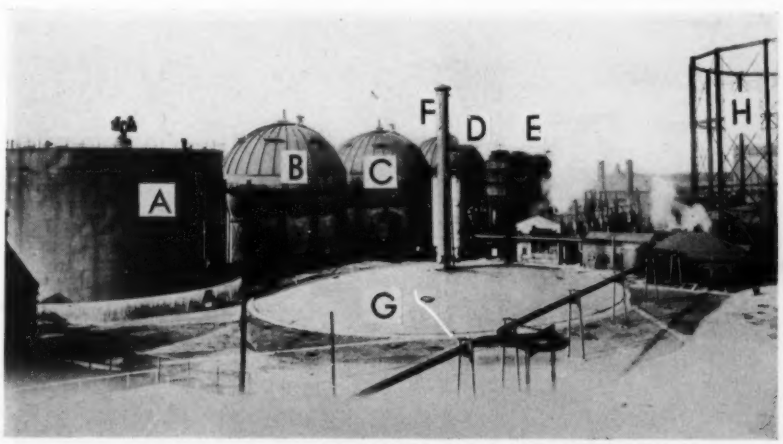
The fire spread with unbelievable speed through the district bounded by St. Clair avenue, N. E., E. 55th street, E. 67th street and Memorial Shoreway, N. E. Notwithstanding that fact, and the seeming hopelessness of the task facing the fire fighters upon their arrival at the scene, by 7:00 P.M. that evening Assistant Chief Nimmo, of the Cleveland fire department, was quoted as saying "We have the fire controlled now, between 63rd and 55th street." Before midnight of that day, Chief James E. Granger, head of the department, had announced the fire was under control but warned it would continue at least through the night. At about this time Mayor Frank J. Lausche was ordering the evacuation of a wide area, bordering on the fire district, saying: "While the fire seems under control we want no tragedy in the event of the explosion of another tank."

Although the fire made little progress from that time on, nearly the entire Cleveland department, aided by all available auxiliaries, civilian defense volunteers, the Coast Guard, and firemen of nearby municipalities, fought untiringly for 24 hours before the worst dangers were believed past, and it was several days before the last of Cleveland's first line apparatus returned "in service."

Cause a Mystery

At this writing, nine separate investigations into the cause of the disaster, including that of a 12-member board appointed by Mayor Lausche, are reported under way. Preliminary study of the evidence available discloses little information upon which to base sound conclusions. The major drawback to an early solution is said to be the fact that death took virtually all those who would be in a position to give first hand data.

From fragmentary testimony, mostly based upon reports of eye witnesses, this much is clear: There was some sort of leak in one or both of the two tanks (later wrecked) used for the storage of liquid gas. The released gas in some way became ignited, resulting in a fire of great intensity, which possibly communicated back to the tanks, causing



The East Ohio Gas Co. Plant Before the Explosion

A and B are the liquid gas storage tanks which were destroyed in the blast. C and D are the two storage tanks which remained standing. E is the cooling tower used to reduce the temperature of the natural gas to 250 degrees below Fahrenheit, transforming it into a liquid state. G is the well of an old holder tank into which any surplus liquid gas was supposed to be drained and to evaporate harmlessly into the atmosphere through the vent F. H is the holder tank which went through the fire unscathed, although it was one-third full of gas in its natural state.

the major explosion. This was followed by numerous other explosions of varying intensity, as storage and pockets of gas were ignited.

According to press reports the most spectacular of the blasts occurred some minutes after the actual fire started in or near the liquid storage plant of the East Ohio Gas Company. There were at least six separate and individual explosions of some magnitude, and numerous lesser ones.

Said one observer: "An immense sheet of flame shot more than 500 feet into the air. Suddenly its direction changed and the huge fireball shot south on E. 55th street toward St. Clair avenue. Photographers, reporters and police and fire officials made a mad dash to get out from under the devastating heat which threatened to engulf them. The street-wide mass appeared to be less than 100 feet overhead as flames gave out just north of St. Clair avenue." If this observer is correct, fire forces were already on the ground when the major explosion occurred.

Press pictures showing fire apparatus at work, with charged lines on the street and the great pillar of fire in the background (see cover on this issue) tend to substantiate this observer. There was fire—fast spreading, blasting hot fire, possibly before the major explosion occurred. Other accounts time the more serious explosions at 2:40, 5:00, 5:10, 6:45, 7:00 and 7:45 P.M.

The East Ohio Gas Plant

The East Ohio Gas Company plant is located at E. 55th and the New York Central railroad tracks. Until the war began it was one of the city's reserves against fuel shortage. It is reported that enough gas was compressed in the plant's storage tanks to carry the city over any normal period of natural shortage.

The plant employed a method of changing natural gas, received from as far away as West Virginia, to liquid form and reconverting it back to its natural state as needed by subjecting it to a process which, although not particularly new, is nevertheless not in general use. It is reported that other gas companies were paying much attention to the system—the first of its kind—and some planned to adopt it when materials became available.

The plant itself included, in addition to the natural and liquid gas storage containers, a story and a half compressor plant, a boiling plan, and towering tiers of cooling pipes and equipment.

It is with the storage tanks that we are most concerned. There were four of these for storing the gas in liquid form. Each was higher than a three-story building. One tank was cylindrical and three spherical in form. All had the lower section incased by concrete retaining walls and, it is said, all were heavily insulated to make possible the retention of the very low temperature of the liquefied gas. One report had this insulation to be cork, three feet thick. Others give it as a form of mineral or rock wool which is still to be found scattered over the area.

The four tanks were somewhat like four huge thermos bottles filled with water. The liquid inside of them was under no pressure as long as the temperature was maintained at low point. It was simply stored in this form for future emergency use in which process the contents of the tanks would have been vaporized by heat and fed into the city distribution systems. These tanks, we are told, were built in 1941 and had a capacity of 240,000,000 cubic feet in gaseous form or more than 400,000 cubic feet in liquid form. The cylindrical tank was the latest to be erected.

Beside the containers for storing the liquid gas there was a large holder tank from which was in its natural state was converted to liquid form by bathing it in ethelyne and dropping the temperature to minus 250 degrees Fahr. This operation was done in the large cooling towers.

The holder tank, oddly enough, went through the fire unscathed although flames raged all about it and at the time of the fire it was reported to be one-third full of gas in its natural state. This holder tank is suspended in water, its rise and fall depending upon the amount of gas in it.

Two of the spherical tanks remained intact after the blast and fire. One spherical and the cylindrical tank, both said to have been filled with liquid gas, were destroyed (see accompanying illustration).

Highly Combustible Vapors

In its liquid state liquid gas will not burn. But when it is exposed to the air it will vaporize and the vapor when mixed with air in the right proportions then becomes a combustible mixture. This vapor, being heavier than air, remains close to the ground and finds its way readily into below-ground levels. Some idea of the quantities of highly combustible vapors released into the air by the explosions that rocked the plant may be drawn from the reported fact that each cubic foot of liquid gas under these conditions would expand to some 600 times its volume.

Two chief questions plague the investigators at this time—(1) where was the initial explosion, inside or outside the storage tank or tanks? Did one explosion come first, to permit the liquid gas to escape, or did the gas first leak out and this escaping, vaporizing gas cause the explosion? (2) why did not the two remaining spherical tanks and the holder tank with its one-third contents of natural gas also explode?

It is said to be obvious that one of two things occurred—

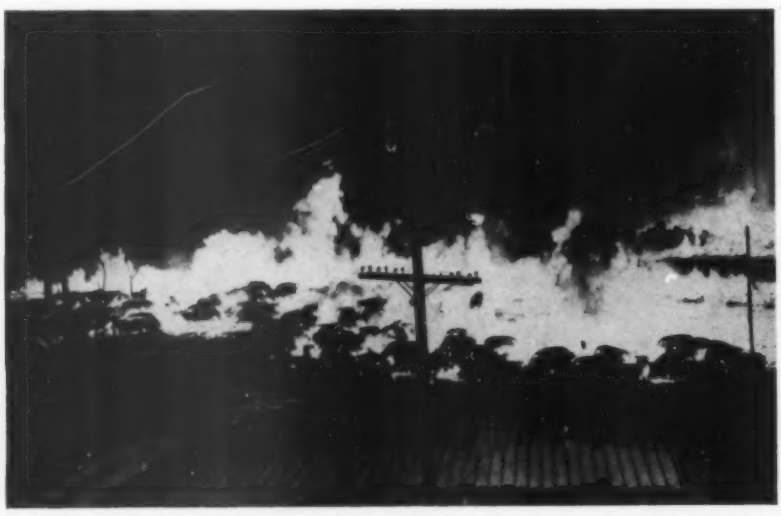
(1) Either an explosion scattered the liquid contents of one or two tanks over a wide area and the liquids upon vaporization became ignited, or

(2) The liquid gas in some manner leaked out of one of the tanks and upon contact with the air gradually began to vaporize, becoming a combustible mixture which exploded.

Liquid Gas Leaked Out of Tank

Eye witness accounts of the appearance of a "white vapor rolling over the ground" prior to the explosion would seem to indicate that the liquid gas first leaked out of a tank or tanks. This is substantiated by the reported account of James R. Scherrer, assistant chief engineer of the Security Mfg. Co. of Kansas City, one of the few reported to have escaped alive from the American Gas Association's laboratories on E. 62nd street, close by. Mr. Scherrer had been engaged in testing equipment which his firm manufactures. He says: "I had just walked from the testing room into the shipping room of the laboratory when someone said 'there goes the East Ohio Gas Co.' Being a gas engineer, when I saw that liquid gas coming across the rim of the tank (his report did not say which tank), I took off. So did the others in that room. Once outside, running down E. 62nd street all of us helped each other all we could. Wisps of fire seemed to be floating through the air; the whole works appeared ablaze." Scherrer was burned on the back, arms and neck.

The accounts suggest that the liquid gas spread widely over the neighborhood in gaseous form was quickly ignited, filling the air with flames, being followed shortly by the major terrific explosion.



Automobile Bonfire. Between 400 and 500 Motor Cars Were Damaged, 200 Completely Destroyed, in the Devastated Area.

It is certain that the released liquid flowed along the curbs and gutters, spreading the gas through sewers and into catch basins over a wide area. All the time it was spreading, the liquid was vaporizing and forming combustible mixtures, pockets of which exploded from time to time for hours afterward, some blasts throwing manhole covers high into the air.

Eye witnesses seem to agree on the flying particles of fire which appeared to fill the air immediately after the first blast, burning and scorching everything they touched. Some witnesses claim these particles were part of the insulation on the storage tanks but this lacks confirmation.

What caused the gas to escape, and what ignited the vapors, remain conjectures at this writing. An idea of the extent and degree of the main blast may be drawn from the published testimony of a cool-headed surveyor who actually used a slide-rule to make his calculations. He is James L. Black of National Survey Service, who was in his office measured at two and five-eighth miles away, and who sighted by instruments along a factory roof and chimney and found the top of the flame to be 11½ degrees above the horizon. "The slide-rule gave me the answer," he said, "setting at 2,800 feet the maximum height of the pillar of fire."

Another witness, R. M. Connor, manager of the laboratories, is reported to have said that one of the liquid storage tanks "had burst at the seams" and sent the "frosty looking" gas flowing swiftly south on 62nd street.

As soon as there was no longer danger of the unexploded tanks letting go, gas company engineers and workmen linked a locomotive boiler to a vaporizing system beneath the two huge spherical containers that mysteriously weathered the explosions and fire, to draw off the remaining liquid gas and convert it into its original gaseous form. Steam is required for this conversion and the locomotive substituted for the plant's boiler room, which was destroyed. The converted gas was to be channeled into the company's mains.

Fire Alarms and Responses

The speed with which the fire forces got to work is indicated by the "log" of the Cleveland Fire Department. In the compressor control house, remarkably preserved considering its nearness to the dome tanks, the board of gauges for operating the liquefying machinery is said to be unharmed; and one instrument, a clock, stopped at 2:40:48 P.M. on Friday, October 20.

According to the fire department records furnished by Battalion Chief Charles Harris of the Fire Alarm Signal System—

"At 2:43 P.M. October 20th, 1944, Lieutenant Guild (Fire Alarm Office) received a phone call from Captain Zahler of Engine Company No. 19 to send out Box 1346 and make a Second Alarm to same. At 2:46 P.M. Signal 55 (Fifth Alarm) to Box 1346 was sent to the Department, and from that time on the Fire Alarm Office went to Centralized Office Dispatching."

The reference to "Centralized Office Dispatching" no doubt applies to the dispatching of all further apparatus and services beyond the Fifth Alarm by direction of the Fire Alarm Office, as running cards provide for no greater than Fifth Alarm assignments, additional forces thereafter being summoned by "Special Calls."

Partial Aerial View of the Destruction

Looking across E. 61st and 62nd streets to 63rd street where fire was stopped at factories. Shown are the two spherical liquid gas tanks (far left) intact; to their right coal piles still burning and immediately beyond (upper left center) the blasted offices of the East Ohio Gas Co. Near these ruins are burned wrecks of automobiles in parking lot.

The report of Chief Harris continues—

"Between the time of Box 1346 at 2:43 P.M., and 4:00 P.M., the Fire Alarm Office received and dispatched eight (8) other Alarms to the Department. The Fire Alarm Office Telephone Board is serviced with fifteen (15) Ohio Bell trunks, and these lines were in constant use for several hours, and reports were received from citizens that they had tried to reach the Fire Alarm Office and all lines were in use. Most of the fire alarm boxes within three to four thousand feet of the fire were turned in several times, in fact, until the boxes were in some cases run down. This caused much checking and some coverage to make sure that some of the boxes turned in were not for other fires.

According to Chief Harris: "the first alarm was received from Captain Zahler of Engine Co. 19 who ordered the Company House Box to be keyed in."

The following chronological accounting of alarms shows the rapidity with which the greater body of fire forces were mobilized—

Alarm	Time	Source
Box 1346	2:43 P.M.	Received from Captain Zahler
22 1346	2:45 P.M.	Received from Captain Zahler
55 1346	2:46 P.M.	Received from Captain Zahler
525-5 1346	2:54 P.M.	Made by Captain Harrison, Batt. 4
525-1 1346	3:50 P.M.	Made by Radio car 893
527-1 1346	3:56 P.M.	Made by Radio, Act. Asst. Chief O'Brien
525-2 1346	4:00 P.M.	Made by Radio, Captain Harrison, Batt. 4
525-2 1346	4:12 P.M.	Made by Radio, Act. Asst. Chief O'Brien

At 2:55 P.M. Engine Co. No. 18, struck out of service at E. 40th and Chester Ave., over Box 2232, while en route to fire.

Responding to the above alarms were the following—

Engine Cos.: 1-2-3-4-5-7-8-9-10-12-13-14-16-17-19-20-22-23-25-27-28-29-30-31-32-34-38
Hook & Ladder Cos.: 1-3-6-8-11-14-2
Rescue Squad Cos.: 1-3
Hose Co. No. 2
U. S. Coast Guard Fire Boat

Total Engine Cos. 27, Hook & Ladder Cos. 7, Rescue Squad Cos. 2, Hose Cos. 1, Battalion Chiefs 6, Fire Boats 1

The following Department Officers attended the Fire:

Chief James E. Granger; 1st Assistant Chief Nimmo; Act. Assistant Chief J. O'Brien; Battalions 1-4-5-6-8-10. Also Battalion Chief H. Warden; Captain C. Eisenhart; Arson Squad (listed elsewhere); Photographer J. Beorsig.

Outside Help Offered

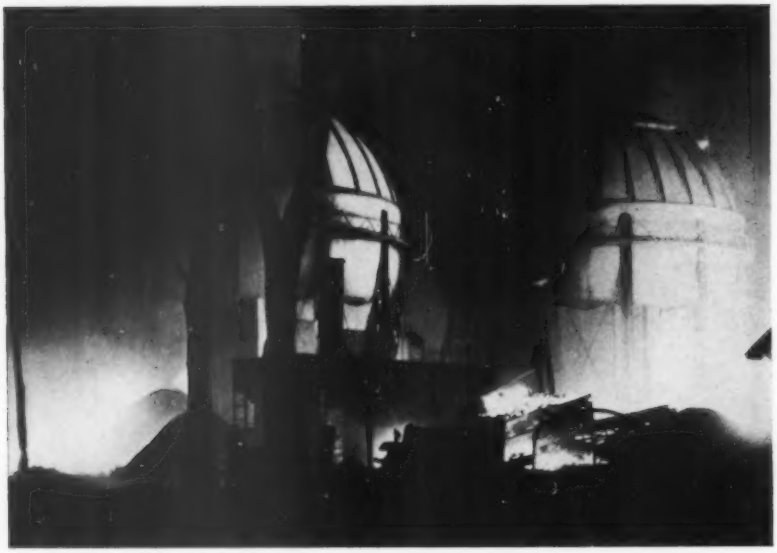
As the extent of the disaster became known, offers of help poured in.

Chief Harris's report has this to say about outside aid—

"All of the municipalities nearby, and others, including Painsville, Akron, Bedford, Berea, Cleveland Heights, Euclid, Hinckley and South Euclid, called and offered to help with the fire in the East 65th Street district, or any other fire that might occur within our city limits. Lakewood sent two (2) Companies to fill in Engine House No. 32, East Cleveland sent one (1) Company to fill in Engine House No. 10, Garfield Heights sent one (1) Company to fill in Engine House No. 13. A plan was set up to use Companies of municipalities that are on our borders in case of fire in that section of the City."

Explosions Disrupt Circuits

That the fire department's Fire Alarm Signal System did not escape the blasts and suffered with the other utilities,



Mystery Is Why These Two Spherical Liquid Gas Tanks Failed to Explode, Subject as They Were to Fire for Many Hours. Burning Coal Piles in Foreground. Note Concrete "Collars."

is also indicated by Chief Harris's report. He states—

"At about 7:30 P.M. an underground explosion at East 61st Street and St. Clair (see illustration) blew up the street and damaged two (2) fire alarm cables, disrupting all circuits servicing the Northeast section of Cleveland, causing 230 fire alarm boxes to be out of service. The primary and secondary fire alarm circuits servicing Engine Companies 30, 31 and 40 were also out. The line crews were called, and they reported at once and started work to restore service. Some of the circuits were restored by 9:00 P.M. and the remainder were restored by 11:30 P.M. This required a number of changes. Sunday, October 22nd, the damaged cables were temporarily repaired and all circuits were put back to normal."

Chief Harris's report concludes with the following graphic statement—

"The personnel of the Fire Alarm Signal System inside and out returned to duty, or volunteered to do so."

Emergency and Relief Forces Rallied

As quickly as the extent of the disaster was learned, mobilization of emergency and relief forces was ordered. Police and fire services were ordered on 12 hour duty. From the Coast Guard came over 400, the Navy Diesel Training School sent 100; all the city's available auxiliary firemen and other civilian defense volunteers were alerted. By 4:00 P.M. Friday the 21st, 3,000 policemen, firemen and civilian defense workers, doctors, nurses, military police and members of all the armed forces were reported in the area.

Mayor Frank L. Lausche early conferred with Safety Director Frank D. Celebrezze, and Common Pleas Judge Stanley B. Orr, Chairman, Greater Cleveland Chapter, American Red Cross, as well as with representatives of the utility and relief services and disaster plans, some of which had been developed as part of Cleveland's civilian and municipal war defense measures.

All East side hospitals turned over all their facilities to the injured. First aid stations, including one of the Red Cross and one of the Coast Guard, were installed at strategic points. The fire house of Engine Company 19 at E. 55th street and St. Clair avenue became the center of activity, Fire Chief Granger and his aides in the fire department and the police using it as field headquarters. Many injured were treated also at the first aid station set up at the St. Clair baths where emergency telephone call stations were later installed.

The first problem was rescue, but this was complicated by the intensity of the heat, the threat of exploding vapors and the actual explosions of gas pockets over wide areas. It was not until the fire department had the fire under control that rescue and search parties were able to make appreciable headway in the ruins. Only fire and police were allowed to search for victims.

Directing the search was Coroner Samuel H. Gerber and Police Inspector Wayne Sorge and Detective Lieutenant Martin Cooney. The police appointed five search parties in charge of lieutenants. Each party was equipped with identification tags. The police investigation squad of twenty went to work to determine the cause as did the fire department arson squad, including Richard Dworning, Sam Cohen and Henry Hertzog.

Civilian volunteer groups were split up to include "laborers," volunteers from the county engineer's office and East Ohio Gas Company, under the supervision of patrolmen. They were given many duties, from checking sewers and underground conduits for accumulations of gas to helping the homeless and patrolling the area.

Main disaster headquarters was the Willson High School, which was early taken over by the Red Cross. Here refugees were registered and arrangements made for shelter and food.

Another disaster station was set up at St. Andrew's Catholic School, E. 51st street were cots were made ready for 150 homeless. A third station was established at St. George's Catholic School on Superior Avenue, N. E., with fifty cots.

One of the chief problems was the reuniting of members of families separated by the emergency. Children were separated from parents who, in some cases, were casualties. It was difficult to check casualties, many injured being unable to identify themselves. The magnitude of the disaster made it impossible to quickly restore order out of chaos. Identification of the dead was in some cases impossible. Over 70 unidentified bodies were given a common burial, a week after the tragedy.

At one time 680 homeless men, women and children were officially in the care of the American Red Cross. By 7:00 P.M. on Friday, October 20, the Willson School was crowded with refugees, and other homeless persons were besieging the other first aid and refugee centers for assistance.

Canteens were set up by the American Red Cross and the Salvation Army to provide refreshments for fire fighters and the homeless. One restaurateur drove a mobile canteen into the center of the danger zone to serve tired firemen. Arrangements were also made with the public schools to serve food to the bewildered homeless.

Civilian Air Patrol planes flew overhead to survey the burning area while welfare groups, the Y.M.C. and Associated Charities—including all municipal agencies—mobilized for relief. As rapidly as the afflicted area was opened up, residents were permitted to return to their homes, if habitable. Police cars were used to transport the evacuees so that police could check upon the condition of dwellings, and any missing occupants. Meanwhile the Red Cross and other agencies set about the task of rehabilitation—procuring clothing, shelter and food for the hundreds of homeless, identifying and arranging for burial of the dead and rebuilding the devastated area.

Radio Plays a Part

Radio, both public and municipal emergency, played its part in the catastrophe. It is reported that staff members of commercial Station WGAR saw the fire from their studios in the Statler building downtown, and soon dispatched a mobile truck to the scene which went on the air about 3:45 P.M. This was at first used to broadcast general information about the disaster to public listeners, but later it was also put into service as an emergency communications center getting messages through for the police, Coast Guard and Red Cross. The public address system on top of the truck was used to summon various police officers physicians and officials at the scene of the fire. A sound truck was used to urge residents to evacuate the area.

Stations WHK-WCLE were also alerted when the staff saw flames in the sky. WHK's mobile unit was also rushed from Akron to the fire zone where it broadcast police warnings and other public service messages. Both mobile units were helpful in warning the public about extinguishing open fires.

Another station—WTAM, sent out a special radio-equipped automobile about 7:30 P.M. on Friday to assist the police. Station WJW carried reports and messages for its listeners. At about 9:15 Station WGAR reported it had a man

over the scene in a plane and it picked up and rebroadcast his description of the holocaust. It is not known whether or not this was of any value to the fire fighters who by that time had the fire sized up and were deployed to the best advantage to control it. Although broadcasts urged people to evacuate certain areas, there is no record of public broadcasts giving the public outside the area general instructions to remain away from the zone, although some hours later when the emergency traffic regulations were set up they were broadcast.

War Emergency Radio Service went into action. Fifty amateur radio operators and 25 2-way equipped mobile radio units, 6 walkie-talkies and 10 fixed report center stations made communication speedy between various police, civilian defense and Red Cross groups. John A. Kiener is the chief radio aide of the Cuyahoga County district. He reported WERS personnel were being alerted 10 minutes after the CDC mobilization signal went out.

Utilities Work to Restore Service

Cleveland's utilities were hard hit. Gas, electricity and telephones were knocked out and transportation facilities partially disrupted. Only water services alone were reported largely unaffected, according to city utilities director, Emil J. Crown.

The most widely affected was the gas service. At least 14 of some 39 industrial plants crippled by the fire were high pressure gas consumers working on war orders and both gas and electric companies concentrated, with the aid of local representatives of the War Production Board, upon the task of restoring production facilities in these plants.

For reasons of safety, soon after the extent of the disaster was realized, the East Ohio Gas Company and the police department, with the aid of radio broadcasting stations and civilian protection volunteers, called on everyone in the area bounded by E. 40th street, Euclid avenue, E. 105th street and the lake shore, to turn out all fires because of the danger from unburned gas spread through the area by air and sewer. A large sewer culvert at Norwood Road and St. Clair was reported blasted.

Services on the New York Central and Pennsylvania Railroad Lines which run directly north of the gas plant was halted by the fire. Passenger trains ordinarily using the shore route went through Union Terminal by way of Collindale and Linndale. Freight trains used the Cleveland Short Line.

City transit service in the disaster area was halted. Exploding sewer manholes compelled some bus and street car lines to shut down entirely. Several hundred feet of track were reported blown up in the vicinity of E. 61st street. Later, temporary tracks were laid on St. Clair Avenue.

Many cables of the Cleveland Electric Illuminating Company and the Municipal Light Plant running through the devastated areas were burned. Poles in some places were completely consumed and others burned and dropped. Power in the affected area was cut off for safety.

The Ohio Bell Telephone Company estimated that 878 phones were put out of commission and many circuits crippled on three exchanges in the affected area. In some instances underground cables were said to have been damaged. All available emergency gangs labored to restore service. Temporary phones for the use of fire and other officials, and a dozen emergency pay stations were in service in the nearby public bath houses the first night of the fire.

According to reports, although the disaster presented utilities with one of the biggest emergency repair jobs with which they have ever had to deal, the problem was tempered somewhat by the fact that in the section largely destroyed by fire, there will be little or no need for these services for some time to come.

Ironically, when a fire department pumper dropped into a big hole at St. Clair avenue N. E. and E. 61st street, as the pavement buckled under it, ducts containing 12 cables with 11,000 volts were crushed, but the cables held. Current was cut off there and routed through other lines. Near this scene a water main is reported to have burst and possibly this caused the sinking of the street.

Losses Are Heavy

Fire Chief James E. Granger is quoted as saying that insurance adjusters have set the combined estimate of loss in property, business establishments and homes at $15,000,000. City Building Commissioner William D. Guion, using Sanborn insurance maps, checked the properties in the area and announced that 82 dwellings in the immediate vicinity of the liquefying plant had been destroyed. His survey showed:

East Ohio Property, at foot of E. 61st street—Two large gas containers, office and shop building, meter department building, laboratory, a large storage building and three tar and ammonia tanks destroyed (a large storage of coal was also burned).

Lake Court N. E.—Twenty-four of 27 dwellings destroyed.

E. 55th Street—The Whiteway Metal Stamping Co., warehouses of the Nock Fire Brick Co. and a motor freight station at 1253 E. 55th street destroyed.

E. 61st Street—Forty-five dwellings destroyed.

E. 62nd Street—The American Gas Association building damaged and 12 dwellings destroyed.

E. 63rd Street—A double-dwelling destroyed.

St. Clair Avenue N. E.—Several store and residence buildings burned out and "more than" 60 stores and buildings badly damaged.

No estimates of personal property loss has been made nor will it be possible to estimate the loss to the war effort through the crippling of industrial plants.

To the foregoing should be added the loss of at least 200 automobiles, destroyed by fire and, according to Deputy Inspector Wayne B. Sorge and Coroner Gerber, two other metal plants, destroyed—the American Metal Treating Co., 1035 E. 62nd street and the George H. Porter Steel Treating Co., 1265 E. 55th street. Another concern, the Red Star Transit Co. suffered considerable loss when eight trailers and its loading dock burned.

Other Cleveland Disasters

The East Ohio Gas Company holocaust recalls other Cleveland disasters. Chief among them was the Collinwood School fire of March 4, 1908, when two teachers and 178 pupils perished in a walled trap

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Explosion Drops Pumper I

An explosion at Norwood Road (E. 61st Street) and St. Clair Avenue, N.E., disrupted fire alarm circuits, putting 230 fire alarm boxes out of service; ruptured a water main and collapsed the street, dropping Cleveland Pumper No. 7 into an excavation. View also shows temporary street car tracks on St. Clair Avenue, N.E.

Lessons to be Learned from Large Fires

Case Histories of Conflagrations and Other Disasters Provide Pattern for Guidance of Fire Service in Mutual Aid Response and Operations

By ROI B. WOOLLEY

A STUDY of large fires discloses that few grew to conflagration proportions because of one thing. In most cases there are a number of contributing causes. As one chief put it: "most big fires are the result of a lot of little things going wrong."

What are these things? Do they provide a blueprint or pattern that will help the fire service to develop better fire control and fire fighting plans and measures—including the utilization of neighborhood services? The following article attempts to answer these and kindred questions.

There Must Be a Commander-in-Chief

The larger the fire and the greater the fire forces at work, the more important becomes the factor of command. As in war there must be a commander-in-chief. The "blitz" fires in England, as well as numerous conflagrations in this country, attest the necessity of "command eschelon" from the top down through company officers, and of the aiding forces reporting their arrival and movements to, and securing instructions from, the commanding officer through whatever channels, or eschelons of command are set up.

In the fire service it is the unwritten law that the ranking officer of the community or district in which the fire occurs shall be in charge. Notice we say "ranking officer." It has happened that the responsibility for calling for additional help, and directing initial operations on the fire ground have often fallen to the lot of subordinates, temporarily in charge. There have been occasions when such an officer, in an effort to contact his superior and hesitating to assume authority has delayed summoning assistance, with unfortunate results. The ranking officer in charge should, until relieved by a superior, assume and exercise the necessary authority. If, as has happened in the case where a volunteer officer has desired to defer to an incoming officer in whom he has more confidence than he has in himself, the volunteer requests his contemporary to take over, he cannot escape full responsibility for what is done; he should support and carry out the orders of his advisor.

It is not unusual for excited or overzealous civic authorities to issue calls for assistance, or give orders on the fire ground, without consulting the office in charge. This is more common to the smaller communities where large fires are rare. It has resulted in confusion, delay and disruption of the chief officer's plan of attack on the fire. It may be well to repeat here that upon the chief officer in command rests the responsibility for successfully fighting that fire. Inasmuch as he is responsible, and will be held so in the court of public opinion, if not by his local government, he should brook no interference. Fire officers in doubt on this score will do well to have a complete and predetermined understanding with their local government and civilian protection officials.

On-the-Fire-Ground Communications

Walkie talkie and handy talkie radio provides quick, flexible two-way communications on the fire ground. Here, John J. McCarthy, Asst. Chief in Command, New York Fire Department, directs large scale fire ground operations via the Department's own two-way "pack-sets."

There Should Be a "G H Q" (General Headquarters)

The officer in command should have a headquarters, where he can be reached quickly; to which reports can be dispatched, and from which orders may be issued. Review of the history of many large fires, and particularly fast spreading ones, discloses the fact that it was frequently difficult to quickly locate the officer in charge. Here again delay, confusion and lack of coordination resulted.

Headquarters may be located at a police or fire radio car, strategically placed, or it may be a public building, or a corner drug-store, but it should have one requisite—communications facilities of some sort.

In some cities, the G.H.Q. is indicated by day by a flag on a standard; by night, by a colored lantern or lamp. However marked, the location of G.H.Q. should be passed around to all officers as quickly as it is established.

If, for any reason the officer in charge leaves his headquarters, a responsible officer should be located there to handle communications and maintain contact with the forces disposed on the fire ground. This will be far easier in the days to come when mobile and "walkie-talkie" short-wave radio are in more general use.

Prompt, Thorough "Size Up" and Calling for Aid

Prominent among the lessons learned from large fires, is the need of quick and thorough "size-up" at the outset, and prompt action in summoning assistance. In this connection there is an old adage which goes like this: *"Any chief can explain the reasons why he called for assistance that was not needed, but no excuses can be given for his not calling for help when it was needed."*

Failure to appreciate the magnitude or the conflagration possibilities in the fire in its early stages has been found in our study of the contributing causes of large fires. It is well to remember that "exposures" may under certain fire conditions, exist at considerable distances

Conflagration in the Making

This fast spreading fire which razed 20 structures and damaged 50 more in Philadelphia (Pa.) illustrates the problems facing a fire department with fire out of control.

from the main body of fire. While chiefs at one serious fire were beginning to feel that they had the situation in hand, another threatening fire, ignited by embers from the original blaze, was making headway over a mile away.

"Size-up" must be measured not alone in terms of what is burning, the exposures, weather conditions, and so on, but the ability of the local force—and reserves—to cope with the situation as it is, and as it may develop. Since "size-up" is often a matter of taking a reporting officer's word for conditions (or a civilian's) a chief officer faced by a threatening fire must be alert to errors—both the natural ones made by perhaps the overly excited and alarmed citizen, or the too-confident fireman. Chiefs who have battled large-scale fires will agree on the importance of securing all possible accurate information about the fire—the life and property hazards, what's burning and so on, and the possibilities for extension, and trouble, at the earliest possible moment. They know the value of cool-headed, intelligent aides to do their scouting; to carry orders and to see that they are carried out. Our study shows that the lack of capable aides, or liaison officers, has contributed to the fire departments' inability to estimate the extent of and confine and control some fires in their incipient stages.

Importance of "Covering" a Community

Recently some forty pieces of fire apparatus were dispatched from about twenty communities to fight a conflagration. The response deprived a number of communities of practically all fire protection for several hours because there was no central authority or no action taken to "cover" these depleted fire departments. Luckily there were no serious fires during this period; had there been, the results might have been disastrous.

Another fire which gave Army authorities concern and resulted in a shake-up in the mutual aid plans of the area, resulted in five important war plants in a certain "target area" being left without any organized fire protection for over twenty hours, because of failure to "cover-in" or "locate" fire forces to safeguard the unprotected communities.

The Atlanta (Ga.) fire of 1917, which burned 300 acres, 1,938 structures, with loss of $5,500,000, might not have occurred had there been reserve fire forces available. Most of the city's apparatus was called to a fire in a newly-built cotton warehouse. While they were at work an alarm was received for another fire in a frame dwelling two miles distant. This took more equipment. An hour later, an alarm was received for another—and what developed into the major fire—about three-quarters of a mile from the second. This blaze, starting with the ignition of a small shed that a handy booster line could have extinguished, could not be promptly handled by the depleted fire force, and quickly got out of control.

Experienced fire officers never willingly strip their community of protection. If it is ever necessary—as may be the case when "all hands" are operating at a serious fire—they either place reserves in service, or, if none is available, provide for coverage by outside forces. A fire department's first responsibility is to its own community. There is always the danger, however, that fire may strike while the department is weakened by depletion of its forces which may be operating on a mutual aid call, out of town, or at a working fire in its own area. This was the case in the City of Washington when a firebug touched off numerous fires, some of which developed into multiple-alarm proportions necessitating the calling of aid from as far away as Baltimore. The City of New York has had to fight as many as three simultaneous multiple alarm fires.

Importance of Maintaining Communications

The larger the area covered by the fire, the more difficult it is to maintain contact with all the fire forces at work. If there is no "G.H.Q."—that is, the commanding officer cannot easily be located, the situation is complicated.

Experience derived from the war, the New England and other hurricanes, and the Ohio River and other floods, has demonstrated that fallacy of placing dependency upon any one form of communication facility.

In the past, calling for assistance has been largely done by telephone. This

Where "Liaison" Is a Problem

Uncontrolled large area fire, "making tracks" like this Chicago stockyards conflagration, illustrates the difficulties of maintaining communication between the fire forces, and mobilizing them to "make a stop."

has its drawbacks; the telephone exchanges may be jammed with "traffic" or the fire itself, or the storm, may disrupt the service. Occasions have been frequent where fire officials, attempting to contact neighboring fire forces, have been seriously delayed in getting calls through. Modern mutual aid plans include the maintenance and use of independent wire communications exclusively for fire department use (unlisted "fire trunks," etc.). They include also, the utilization of short-wave radio, public and police teletype, and even messengers.

It is said that radio was first used on a large scale as an aid in fire fighting at the Chicago stockyards conflagration, May 19, 1934. Broadcasts of the commercial stations were effective in conserving water supplies and securing rapid response from off-shift firemen and outside aid, although the news features of the broadcasts were unsatisfactory and some believe that the exaggerated accounts of the fire, due to lack of trained observers and suitable observation posts, were harmful rather than helpful. The evidence at hand suggests that public broadcasting stations should not be depended upon, or used, to summon aid or direct fire fighting operations except in unusual emergencies. Public broadcasting of large fires has resulted in the jamming of telephone switchboards by curiosity seekers, and the crowding of highways which should be kept open for responding apparatus.

Knowing "What's What—and Where"

Every chief officer worthy of the name knows his own fire department, but not every one is well acquainted with his neighboring departments from which he might have to summon aid. Frequently, in large scale fires, special apparatus and/or equipment is required, and considerable time may be lost if those wanting it—or their aides—do not know where to locate it, or how to get it.

Modern mutual aid plans include as essential the gathering and exchange of accurate information on the fire fighting forces—apparatus, equipment, personnel of the area. These data should be located at fire headquarters, and in the hands of the chief officers and should periodically be brought up to date.

In calling for aid the records indicate that many times the wrong kind of help was dispatched on the mutual aid call because the person transmitting the call failed to indicate exactly what was wanted, and where. The progress of one large fire might have been checked had the officer calling for help specified that he wanted pumpers with boosters instead of "just pumpers." Experience also indicates that pumping units of less than 750 gallons capacity and carrying, or accompanied by carriers with less than 1,200 feet or more of 2½ inch hose are at times impractical when operating on out-of-town mutual aid calls.

The Traffic Problem

Motorized fire apparatus and good roads have speeded up response and facilitated mutual aid assignment. At the same time, they have created new problems for the fire service, the most serious being that of keeping traffic arteries open for the movement of apparatus in time of emergency. This is a problem which calls for the cooperation of fire, police, fire patrols and other emergency agencies.

Because the shortest routes between communities in time of mutual aid movements are usually the most heavily used roads, either alternate routes should be laid out for the use of fire apparatus, or the major highways should be closed to civilian traffic. In anticipation of possible large scale transportation in some coast areas, what is known as "alternate routes" were mapped and placarded by the highway authorities. Civilians and protection authorities were instructed as to their use. It might be well to retain this system for peacetime emergency application.

In Westchester (N. Y.) and some other counties, plans have been in effect whereby the railroads can be used in the event the response of fire services cannot be made by road, as was the case in the New England hurricane. These carriers may well be considered in mutual aid response plans.

The commercial broadcasting stations which so often acquaint the public with the news of large fires, unwittingly inspiring them to jump into their cars and head for the scene of trouble, should be willing to cooperate with the emergency services to the extent of warning motorists and curiosity seekers to keep away from the area, and to assist in keeping open the roads that may be required by the movement of fire forces. Radio-equipped police and fire cars prove invaluable in directing and "convoying" movement of fire apparatus in such emergencies.

Parked cars and trucks have presented further obstacles to effective fire fighting operations. Where possible they should be removed from the path of the fire. This means tow-ropes or chains and towing vehicles should be available. It should be unnecessary to utilize fire apparatus for this purpose, yet it has been attempted, with consequent delay. Firemen should have to concentrate only on the business of fighting the fire.

Another important detail is to provide guides to direct and locate the incoming apparatus to its designated place, at the fire or fire stations. Unfamiliarity with streets and roads in areas to which they respond has frequently delayed movements of incoming fire forces.

Where companies locate in strange firehouses they should be provided with guides who are familiar with the area they are to cover and, if possible, with the system of fire alarm transmission. This work may well be done by off shift, or auxiliary firemen. In the Chicago stockyards fire, equipment from a dozen or more out-of-the-city fire companies were stationed in empty metropolitan firehouses and during their duty tour answered a score of alarms.

Incidentally, large scale maps of company and battalion districts might well be suitably mounted on the walls of every metropolitan fire house. Mutual aid manuals, or guides should carry sectional maps, with primary and secondary routes indicated.

Cutting Off Power Circuits

A fallen power wire helped give the Atlanta conflagration impetus, and similar mishaps have delayed operations at other fires. If representatives of the electric and gas utilities do not respond to fires—at least to multiple alarms—they should be "special called." It is wise, furthermore, to anticipate what the cutting of electric service will mean to the operation of pumping and communication facilities of the area. It is customary today to provide some sort of "stand-by" service for hospitals and emergency communications systems, in anticipation of such emergencies.

Inter-Connections of Available Water Supply

Where pressure systems of neighboring communities can be inter-connected either by means of gates, or hydrant-to-hydrant, this should be provided for. In time of large fire it should be the responsibility of some authority to supervise this detail, and connections should be made as *early as possible*. Without

Parked Cars Help Fire "Go Places"

Parked automobiles can serve as a "fuse" to spread uncontrolled fire as witnessed by this "spill" blaze in Wahington (D. C.) which necessitated a third alarm.

adequate water supplies it is worse than folly to call for out-of-town apparatus, yet that is what has been done upon occasion in the past.

Naturally, all water supplies and the points and methods of inter-connections should be known beforehand to all fire forces in a mutual aid area. So, too, should the persons designated to supervise the inter-connections. Equipment for operating hydrants perhaps of different make and thread—wrenches, hose, etc.—should be available. If hydrant-to-hydrant connections are used, new hose should be available, and sufficient lengths to affect the connections.

Finally, there should be a means of keeping the chief officer on the fire ground currently acquainted with the details of water supply as fire fighting operations progress. He should be notified when additional supplies have been provided—and how much water he is getting. He should be in continual contact with water works officials. Where auxiliary pumps or booster stations are operated there should be no delay in stepping up pressures to anticipate the increased demands that will be imposed by the spread of the fire and the employment of additional pumping apparatus.

Niagaras May Be Needed

It takes heavy streams, and plenty of them, to confine and control conflagration-breeders like this waterfront warehouse fire in Brooklyn.

Large Supplies of Hose Necessary

Analysis of a majority of large fires indicate that large supplies of hose are needed and point to the wisdom of using large size hose. Reserve hose is quickly used up and hose losses from fire, rupture of the hose or its abandonment may be heavy. Study indicates that too many communities do not have ample hose reserves for emergency use—too many, also, are lacking in the larger sizes. This is particularly true since the war conditions have made it difficult to secure new hose.

Incoming companies require long stretches as a rule, and once lines are laid, should a company be forced to abandon its lines (as has happened in numerous large fires), additional hose should be available. Naturally, trucks that can be spared should be returned to quarters or the nearest available supply, to load up.

It ought not be necessary to mention that all hose should be suitably marked for easy identification, on couplings, particularly. So, too, should adapters, and all other accessories and equipment.

Large fires produce heavy demand for nozzles, play-pipes, wrenches, spanners, and other hose line accessories. It has been found in a number of large fires that incoming fire companies could not use their own hydrant wrenches on the hydrants of the communities they were aiding. There has been a great deal said and written about standardization of hose threads and the need of adapters yet progress in this essential of mutual aid is lagging.

Irresponsible Handling of Hose Lines

Most large fires evidence the fallacy of permitting citizens to lay out and operate hose lines and streams. When fire gets too hot they may beat a retreat, leaving nozzles, or hydrants "bleeding," whereas firemen might be able to salvage lines and conserve water. Even though there may be plenty of firemen, it is not unusual to see citizens yanking hose off apparatus, attempting to couple it to hydrants and direct streams. In the excitement of the large fire, well-intentioned but ignorant citizens will want to help, but sometimes it would be better if no lines at all were operated than to permit these irresponsible persons to take hold. At one large fire several long stretches of hose were saved by firemen who used fire trucks to tow the coupled lengths out of danger.

Avoid Dangerous Locations for Apparatus

Records shows that some fire apparatus has been lost in large fires because it was located too near combustible structures or flammable storage containers. Radiated heat from wooden structures 250 feet from one pumper forced operators to withdraw before it could be uncoupled and moved. It was a total loss. Falling walls also have destroyed or damaged equipment left too long in a hazardous spot. Efforts to take suction in ponds, lakes or streams without careful preliminary study of the ground, have mired apparatus, causing delay, and in some cases, damage to equipment.

It is not always possible to avoid some loss but the forethoughtful chief will evaluate the location of his apparatus measured by the nearby hazards, the distance of the fire, and hose stretches, and the speed with which the fire is spreading. He will also consider what might happen if the fire were to outflank, or get behind his forces.

Importance of Heavy Streams

The tendency at most conflagrations, it would appear from the fires studied, is to try to use many small streams instead of fewer heavy ones. Small streams well in advance of the fire may be effective in protecting exposures, if well handled, but in the main, the major body of fire can only be controlled by heavy streams, well placed. Experience shows it advisable not only to make immediate efforts to dampen down or cool the main body of fire, but to get heavy streams into operation so that they will retard heat radiation and the spread of embers. In one of the fires studied, heavy streams were directed into the lower floors of the burning building in the effort to save part of the structure, while the fire was allowed to roar through the roof, spreading blazing embers for blocks around. In another similar fire, heavy streams were curtained over the roof of the burning building and used to kill the radiated heat with the result that there was little extension by flying brands.

If low structures are involved, as happens in smaller communities, large streams from ladder-pipes or deck guns sweeping the roofs may retard extension. The difficulty in handling large fires in these communities is the usual absence of such heavy dutv appliances. Here, again, the mutual aid inventory is valuable to inform chief officers where and how they can get the necessary appliances.

The use of hydrant streams at large fires, except in high pressure areas, is generally ineffective and only serves to "bleed" the system.

Chiefs should know where fire walls, or entire "slow burner" structures are located in the high hazard districts, and therefore where the best stand may be made against a large fire's progress. Such knowledge by chief officers and prompt planning to organize the fire "front" to take fullest advantage of the "stop" has helped control a number of serious fires.

Effective Use of Boosters

With heavy streams to check the advance at the main body of fire from structure to structure the big problem is to prevent rapid extension by way of sparks and embers. Fires studied, indicate the vulnerability of shingle roofs and unprotected openings. Embers can

(*Continued on page* 814)

FIRE SERVICE PRESENTS CASE FOR OWN RADIO TO F. C. C.

Receives Encouragement from Federal Officials; Final Answer Some Weeks Away

THE fire service through Committee Two, Panel 13 of the Radio Technical Planning Board, presented its request for additional and independent radio channels before the Federal Communications Commission in Washington, October 21, 1944.

H. A. Friede
Chairman, Committee Two, R.T.P.B.

The Radio Technical Planning Board is the official body created some time ago at the request of the Federal Communications Commission to study the entire field of radio, including its use in emergency communications, and make recommendations to the Commission.

Panel 13, of the Board, which covers portable, mobile and emergency service communications, is made up of some eight Committees, Number One covering Police Communications; Number Two, Fire Service Radio Communications Systems; Number Three, Forestry and Conservation, and so on.

The Panel 13 hearings began with the presentation of the police service—a high spot of which was the request for additional frequencies and independent radio for both police and fire. In brief, the police like the fire service prefers not to have to share its radio frequencies with any other emergency services. The Commission complimented Committee One on its presentation.

Committee Two Membership

Committee Two, which spoke for the fire service, includes the following memmers: Herbert A. Friede, Chairman Emergency Communications, District of Columbia, also Chairman of the Radio Communications Committee of the International Municipal Signal Association. Mr. Friede is a member of the Committee on Communications, International Association of Fire Chiefs; Frank Schierff, Chief, Fire and Communications, Philadelphia; A. L. O'Banion, Superintendent of Fire Communication, Boston; Chief Roi B. Woolley, Chairman, Committee on Communications, International Association of Fire Chiefs, and member of Mr. Friede's Radio Communications Committee; W. H. Greenlaw, City Electrical Engineer, Beverly, Mass.; George W. Bailey, Office of Scientific Research, Washington; Herman C. Morris, Electrical Engineer, Washington and W. N. Krebs (Observer), Safety and Special Services Division, Federal Communications Commission, Washington.

The Committee on Communications of the International Association of Fire Chiefs, Chief of Roi Woolley, Chairman, includes also Herbert A. Friede, Washington; George Richardson, International Fire Fighters Association, Washington; Chief James Duncan, Alexandria, Va.; Chief William J. Cawker, Topeka, Kans. This Committee was appointed by past President Art J. Baker of the I. A. F. C., and re-appointed by Chief Samuel Pope when he became President, this year. It has worked in closest cooperation with the International Municipal Signal Association's Radio Committee.

Mayor Fiorello H. LaGuardia, New York, appeared in behalf of the fire service, speaking for the 230 major cities of the nation represented in the United States Conference of Mayors. He presented a resolution on the assignment of radio frequencies for fire and police urging a greater rather than lesser number of channels for municipal emergency services. He asked that cities be given first priority by the Commission in the allocation of frequencies.

Chairman Friede read the full report and recommendations of the Committee, stressing the growing fire losses, the problems facing the fire service, and its importance in municipal government. He emphasized the need of radio in all its ramifications for the fire service—including its advantages to smaller communities as well as the municipalities through organized mutual aid plans.

Recommended Frequencies for Fire Service

Committee Two, Panel 13, included in its recommendations, assignment of the following frequencies for use of the fire service for its various functions:

1. 10 channels, radio 'phone-point to point, 40 Kc. wide in the 30 to 40 Mc. range.

These channels are required for communications purposes between the central fire dispatching point and sub-control points, and between fire departments of adjacent municipalities and other services closely co-ordinated with the fire suppression forces of a municipality, such as airports, private fire brigades, railroads, or other agencies depending upon the fire service for prompt assistance, water pressure, control, etc.

Further, the fire service will use these same channels for the transmission of facsimile messages to fire departments, fire stations, etc., as the written record is very important to the fire service.

2. 20 channels radio 'phone station to mobile units 40 Kc. wide in the 30 to 40 Mc. range and in the 118 Mc. region of the spectrum in which case the channel width should be 50 Kc.

These channels are the main requirements necessary to provide channels of communications for the station to mobile units, mobile to mobile, and for the marine units of the fire service.

3. 10 channels, radio 'phone, portable or portable to mobile, 50 Kc. wide in the 100-150 Mc. range.

These channels are the minimum requirements based upon a recent study necessary to provide channels of communications at the scene of a fire, and to cordinate the operations of the fire fighting forces engaged in fighting fires in large buildings, marine fire units, forest fires (exclusive of the Forest Service) mountain battalions, etc.

Chief Samuel Pope, President, International Association of Fire Chiefs, presented the appeal of that Association. In this he stressed the gravity of the mounting fire losses and predicted at least 100,000 persons would be killed

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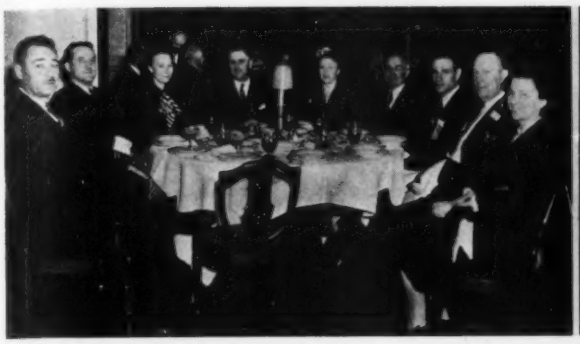
Presented the Case for Radio for the Fire Service

Front Row: Chief Samuel J. Pope, President, International Association of Fire Chiefs; Mayor Fiorello La Guardia, Conference of Mayors; Donald J. McFarlane, Radio Supervisor. Rear Row: Chief Roi B. Woolley, Chairman, Committee on Communications, International Association of Fire Chiefs; Calvin Lauber, National Board of Fire Underwriters; Ray J. Myers, Superintendent Signal Systems, Akron, Ohio; Walter Harford, Police and Fire, Newton, Mass.; Lewis J. Boss, Radio Technician, City of Warwick, R. I.; and C. Leland Ramsdale, Signal Engineer, Woonosquatucket Valley Firemen's League, North Scituate, R. I.

SIGNALMEN HOLD SUCCESSFUL CONFERENCE



The 49th Annual Meeting of the International Municipal Signal Association was held in Boston, October 2 to 5 inclusive with nearly 600 in attendance.

The business and technical program was a heavy one, including papers by persons prominent in all phases of emergency communications. A feature was the emphasis on radio communications with papers by Dr. W. R. G. Baker, Vice President General Electric and Chairman of the Radio Technical Planning Board; Dr. N. E. Noble, Research Division, Galvin Manufacturing Company, Chairman of Panel 13 of the R.T.P.B., and Mr. G. P. Adair, Chief Engineer, Federal Communications Commission. Frederick B. Philbrick, President, Gamewell Company, spoke on municipal signal postwar planning; Mr. Frank Bridges, Chief Engineer, and Edward J. McCarthy, General Sales Manager, both of Gamewell, dwelt on fire and police alarm signal systems.

Mutual aid came in for attention with papers presented by Chief Daniel Tierney, Arlington, Secretary-Treasurer of the International Association of Fire Chiefs, and C. L. Donnelly, Assistant Chief, Lakewood (O.) fire department.

Special attractions included a luncheon by the City of Boston; a "Boston Tea Party" given by the United States Rubber Co.; the "Gamewell Party"; a theatre party, and the annual banquet.

The officers elected for the ensuing year are G. E. Wood, City Electrician, Houston (Tex.), President; John J. Allex, Wilkes-Barre (Pa.), 1st vice president; Wm. F. Qualls, South Bend (Ind.), 2nd vice president; Adin W. Chase, Niagara Falls (N. Y.), 3rd vice president; Irving Schulsinger, New York (N. Y.), Secretary and Charles S. Downs, Altoona (Pa.), Treasurer. Chicago will be the scene of the 1945 conference.

COAST GUARD DEVELOPS MONITOR FOR FIGHTING UNDER-DOCK FIRES

Self-Propelled Floating Monitor Controlled by Tiller Lines, Can Reach Fires Under Piers

FIGHTING fires on the under-side of piers and wharves has long been one of the most difficult tasks confronting harbor firemen. Construction of the structure is often such that it is impossible to successfully combat such fires from the topside. Although a number of devices have been developed for fighting such fires, most of them are "built-into" the structure itself, in the form of sprinklers, or "hose rails" or "tracks" designed to carry standard hose and special pipes underneath the flooring of the pier. Very few of the existing piers and docks have been equipped with such improvements however.

After considerable experimentation, a device known as a "floating monitor" has been developed, and built by the Coast Guard, as licensee under the patent covering the product. A number of these were distributed to various Coast Guard Districts for use on converted fireboats or barges.

The monitor consists principally of an oval-shaped float, 4' 1" long, 2' 3" wide, and 10½" deep, to which are fitted the necessary hose connection distributor nozzle, propelling jet, guide lines, etc. The weight of the monitor, without hose or tiller lines, is said to be 116 pounds.

Construction of Unit Simple

The construction and principle of operation are reported as simple. On the top side and in the direct center is located the distributing nozzle which releases the water for fire-fighting purposes. Immediately beneath the nozzle is a cross-arm which is fastened rigidly to the post which runs through the monitor to the revolving jet on the bottom side. This steering arm has two springs attached which are connected to a fixed handle well forward on the monitor. The tension of these springs is equalized so as to keep the steering arm in a position directly perpendicular to an imaginary line running from the bow to the stern of the monitor. When in this position, the steering arm by means of the steering post holds the propulsion jet on the bottom side in such a position as to direct the course of the monitor directly forward.

Photo by U. S. Coast Guard

Close-Up of Floating Monitor

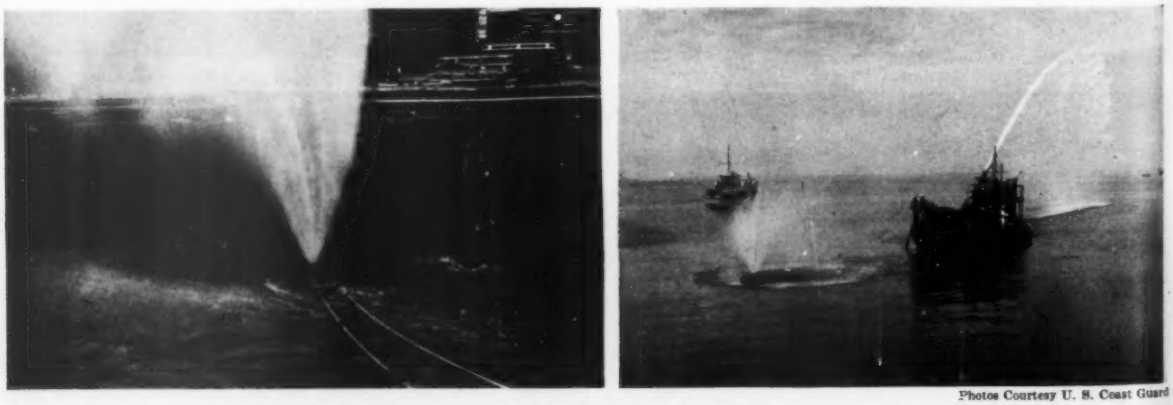
In order to change the course of the monitor, tiller lines are secured to the ends of the steering arm. Pulling on one or the other of the lines will turn the propulsion jet and cause the monitor to proceed in the desired direction. The tiller lines before being secured to the steering arm are threaded through two widely separated eyes at the stern of the monitor. From the monitor, the tiller lines run back to the fireboat from which the monitor is operated. To aid in keeping the lines above water, and also as a means of identification, balsa wood line floats are provided. These floats are furnished in two sizes: large and small. Two (2) large and four (4) small floats are used on each line. The line is threaded through the floats and the floats are placed touching each other. A large float is placed nearest the monitor approximately 10' from the guide eye. The four (4) small floats are placed next, then the other large float. The four small floats are thus between the two large ones. When in position the six floats cover about 3' of the line. One half of the floats are painted red, and one half are green. The red floats are used on the port line and green floats on the starboard line. This aids in identifying the lines and assisting the operator in determining which line to pull. The tiller lines are released from the tiller reel, which is very much like a large fishing reel. The entire reel assembly, with line, weighs approximately 150 pounds and can be moved from one position to another on the barge without difficulty.

When not in use the monitor and tiller reel are stowed on the fire boat or barge in a convenient location. A satisfactory method of stowage has been developed in COPT, Seattle. A cradle is constructed and is nailed to the bulkhead for the purpose of holding the monitor. The tiller reel rests on the deck directly beneath the cradle. From its stowage place, the floating monitor can readily be placed in operation in the event of an under-dock fire. The monitor is carried to the edge of the fire boat or barge and the tiller line is placed directly behind it. The tiller lines are approximately 150' in length, and consequently an equal amount of 2½" hose is laid out on deck before the monitor is placed in the water. After determining that there are no kinks in the line, the hose connections are made to the monitor on one end, and to a pumping unit on the other. The hose floats are attached to the hose approximately 10' apart, with one float adjacent to each coupling. The monitor is then ready for launching. To place the monitor in the water, one man should control its course by using the hoseline, which like the tail, runs back from the stern of the monitor. This method guarantees that the monitor will be topside up in the water. In the meantime a second man controls the tiller lines to prevent their becoming fouled up during the launching.

Operation of Monitor

Once the monitor is in the water, the man operating the pumping unit is directed to start pumping. As soon as this is done, the monitor moves steadily away from the barge under the power created by the propulsion jet. The monitor is easily maneuverable and responds quickly to a pull on either one

(*Continued on page* 834)



Photos Courtesy U. S. Coast Guard

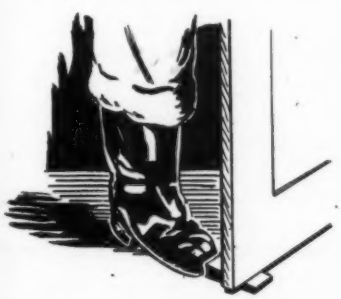
Floating Monitor Developed by Coast Guard Fire Fighters in Action

SHORT CUTS AND GADGETS

FIRE ENGINEERING wishes to thank its readers who sent in their many contributions to this new feature, "Short Cuts and Gadgets." This department is conducted by, and for, readers of FIRE ENGINEERING. It is open to everyone. The editors will pay $1 for every idea published—$5.00 if accompanied by a usable illustration. All contributions will remain the property of FIRE ENGINEERING. Address Editor, "Short Cuts," FIRE ENGINEERING, 24 W. 40th Street, New York, N. Y.

FOR FASTENING A DOOR

In your last issue you told how a piece of cord comes in handy for fastening open a door. It's true—the cord may have many uses but I've also found a small wooden wedge to be useful.



Made of hard wood, about three to five inches long, tapering gradually, these can be kicked under a door to keep it open (or closed). I've also used one to force apart locked wooden sliding doors by driving it between the two sections with a flathead ax. One of my men uses as his wedge the old fashioned clothes pin, with one prong cut away. I also keep a number of sturdy wedges, some of them fairly large size, on my truck. They come in handy in a number of ways.

CAPT. WM. L.

* * *

WARNINGS

Efforts at fast response from fire stations has frequently resulted in injuries to passersby. The standard practice in most cities is to have one or two firemen precede the apparatus out of the station to warn pedestrians and motorists. In many cities these men are equipped with red flag in the daytime and red lamp at night. The practice of having the man on house-watch leave his desk to do this job is not considered advisable. It is important, however, that the task be delegated to someone, because otherwise the men will be so busy getting into turnouts it may be entirely overlooked.

Capt. J. J. O'C.

* * *

OPENING UP

When a H & L Co. is opening up a structure and finds the door unlocked (particularly at night) it is a good plan to notify the fire marshal, or other authority in charge of arson investigations.

A couple of ordinary 6 to 10 ft. hooks can be used in opening up a door that opens inward, the same as a short ladder. Two men or more to a hook. Place point of hook above and below lock and all heave together on signal.

CHIEF T. B.

* * *

FOR EASY IDENTIFICATION

More and more fire departments are marking their rubber or turnout coats with distinctive numbers or letters, or both—such as "E 21" or "AUX"—to make it easy to identify the company members. The practive of running white color stripes around coats or turnouts is also increasing. This makes wearers more distinguishable in the dark, or in smoke. I understand firemen's striped coats can now be purchased in the market.

J. J. K.

Editors Note: Such clothing has been advertised in FIRE ENGINEERING.

* * *

PIN IN ROOF-ROLLER ROPE

Many small departments place a sharp peg or pin in the end of the rope used to "anchor" or "tie" the roof-roller. This pin can be driven into an average roof or floor or wall, and will be sufficient to hold the roof-roller from getting away. About six inches is best. Splice rope.

ANON.

* * *

"CHECK LIST"

A ladder company in a large city has a "check list" for tools. After returning from every fire, by referring to list, driver (or man responsible) can easily locate all tools and determine what's missing.

W. B. R.

* * *

"RIDING LIST"

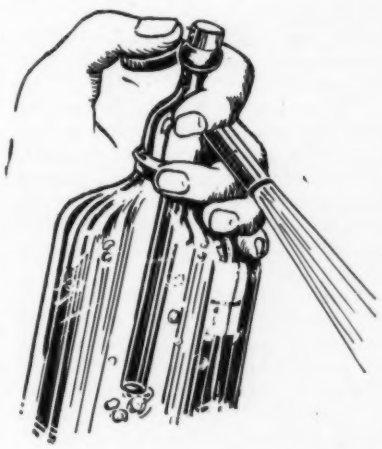
A metropolitan truck company has a "riding list" showing where each man rides (who is to be tiller-man, etc.) and what tools they will take into fire with them unless otherwise ordered. No man leaves truck without some tool. Man who carries lock-breaker and claw is to follow the officer in charge (so officer can make entry). Incidentally, each man has a place on apparatus for his turnout.

LIEUT. J. H.

* * *

"BOTTLED BLAZE BEATERS"

It may be old stuff to some of your readers but it's strange how many firemen forget that in the seltzer and the soda bottle they have a swell "home" extinguisher for class "A" and some class "B" fires.



A Westchester County, New York, chief some time back told of doing a "corking" good job on a blazing oven, and about 1,000 red points of steak, with —of all things—a bottle of beer.

CHIEF C. McC.

* * *

TIME SAVING GADGET IN THE HARTFORD FIRE OFFICE

For a dozen years or more the Hartford, Conn., Fire Department has operated a simple gadget which automatically warns all stations of a following box alarm in less than two seconds after the first blow comes into the alarm office and before the operators there know what the box number is. The device does not sound the signal when an inspector sends in a test call.

The explanation is this: All boxes come in on fast time, about three blows to the second. No box has less than three blows to a round (the shortest being 21 and 12). Upon the third blow the device trips and sends a single warning blow for the large gongs on the slow-time house circuits. Box inspectors send in a preliminary signal of two blows which does not trip the device; the device is then cut out; a go-ahead signal is tapped back to the inspector and he can pull his box without stirring up the stations. When his work is over the device is cut back into service.

H. B. C.

* * *

CLAW TOOL AND FIRE ESCAPE HOOK

A metropolitan company officer sends up a claw tool, hooked by the sharp point, in the loop of the fire-escape hook, when men are hurrying to get a line up a fire escape. Saves a man having to carry it up.

ANON.

Discharge at Sub-Standard Pressures

To the Editor:

On page 135 of "Simplified Fire Department Hydraulics" you have this problem:

"How many lines, each discharging 1,000 gallons per minute, can a fireboat with a rated capacity of 9,000 gallons per minute at 150 pounds pump pressure supply, when the pump pressure required to discharge 1,000 gallons through each of these lines is 70 pounds?"

Your solution is as follows:

"First find the capacity of the fireboat at 70 pounds. The discharge at 70 pounds is, by rule, 9000 x 150 divided by 70, or 19,000 gallons approximately. This discharge would supply nineteen 1,000-gallon streams."

I am a lieutenant on a fireboat and we have two centrifugal pumps of 4500 gallons each at 150 pounds pump pressure.

Just how far down the line can you go? In the example you give, you go as far as 70 pounds. If you can go to 70 pounds, could you drop down to 25 pounds. Isn't there a limit at which you have to stop dropping down to lower pressures.

Some time ago I responded with a fireboat to a call for an ammunition ship that was on fire. When it was decided to sink the ship, I stretched twenty-two 3½-inch lines of hose to the holds of the ship; ten of them were 50 feet in length and twelve of them were 100 feet in length, all with open butts. Forty pounds pressure was maintained at the pumps in the engine room. When I worked this out on paper according to the formula, the discharge was so great, that it didn't seem possible. F. H.

Answer: The factor which determines the maximum discharge of a centrifugal pump at less than rated pressure is the safe speed of the pump and motor.

As the discharge pressure is reduced on a centrifugal pump, the flow can be increased by speeding up the pump. There is a safe point above which this increased speed cannot be carried.

It is largely a question of the design of the apparatus.

From the standpoint of the maker of the apparatus, pumps are not supposed to give more than their rated capacity, but practically, though, centrifugal pumps have and can be operated to give considerably over their rated capacity at lower than rated pressures. The maximum increase over rated pressure cannot be stated unless the type of the pumper is known and the pump performance curve available. However, it would be a safe conjecture that a 25 per cent increase of capacity over rated capacity, when operating a pump at lower than rated pressures would be safe. Records are available showing that centrifugal pumps with the aid of fire hydrant pressure, and operated at higher than the speed at which they would be operated when pumping at capacity, have delivered as much as 100 per cent more than the rated capacity. This is not good practice, however.

Drafting Water at High Altitude

To the Editor:

How many feet will a pumper in good condition draft water at sea level? Also, how many feet will it draft water at 4,463 feet?

E. L. E.

Answer: A pumper is considered to be in good condition when it can draft water a vertical height of 25 feet at sea level. Sea level barometric pressure is commonly taken as 30 inches, which represents 14.73 pounds atmospheric pressure per square inch.

Theoretically a barometric pressure of 14.75 pounds should permit a pump in perfect condition to lift water 14.73 x 2.304, or 33.9 feet, or 34 feet approximately.

Thus the practical maximum lift of 25 feet represents 73.5 per cent of the theoretical maximum.

Now at an elevation of 4,463 feet, the barometric pressure would be in the neighborhood of 25.39 inches, or an atmospheric pressure of 12.47 pounds per square inch approximately.

12.47 x 2.304 gives the theoretical maximum lift by suction of 28.7, or 29 feet approximately.

Taking 25 per cent of this, as representing the practical lift at an elevation of 4,463 feet, we have 21.3 feet as the maximum practical height which a pumper should be expected to raise water.

Engine Pressure for Supplying Deluge Set

To the Editor:

The engine company to which I am assigned has a three-way Grant multiversal with three different nozzles, 1½-inch, 1¾-inch and 2-inch. We have a 1000 gallon pumper and use 2½-inch hose for connecting to the multiversal. Average static hydrant pressure is about 50 pounds. We have used the multiversal several times with good results. However, we have never had any definite information on what engine pressure to use. What I would appreciate is some system to determine what the engine pressure should be for three 100-foot lines, three 150-foot lines and three 200-foot lines, using the above layouts with the three different nozzles. T. R. B.

Answer: To find the engine pressure in a layout involving a multiversal nozzle, the following formula is used:

E. P. = N. P. × (1.1 + KL)

The nozzle pressure in this formula is the pressure which you wish to have at the nozzle.

K, a factor depending upon hose and nozzle diameters, varies for different nozzle diameters and different layouts. For three parallel lines of 2½-inch hose, the values of K are as follows:

K for 1½-inch nozzle using three parallel lines of 2½-inch hose is .061.

K for 1¾-inch nozzle using three parallel lines of 2½-inch hose is .115.

K for 2-inch nozzle using three parallel lines of 2½-inch hose is .190.

L is the number of 50-foot lengths in one of the three parallel lines (when all are of equal length).

As an example of the use of the above formula, assume that we want to have 100 pounds at the nozzle.

Then E. P. = 100 × (1.1 + KL)

K for 1½-inch nozzle on three parallel lines of 2½-inch hose is .061.

L, the number of 50-foot lengths of hose in one of the lines, is 200 ÷ 50, or 4.

Then the formula becomes:

E. P. = 100 × (1.1 + .061 × 4)
= 100 × (1.341)
= 134 pounds pressure, which you will require at the engine.

Engine pressures for other sizes of nozzle and different lengths of layout are solved in precisely the same manner.

Pumpers Supplying Water Tower

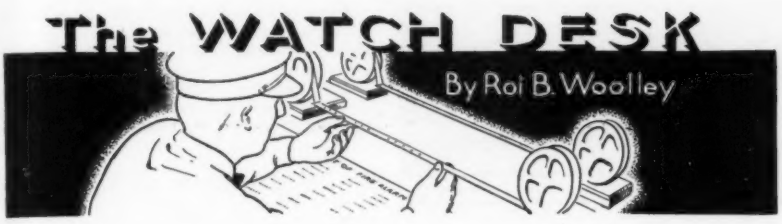
To the Editor:

1. A 1000-gallon centrifugal pumper rated at 120 pounds pressure, 500 gallons at 200 pounds and 333 gallons at 300 pounds is connected to a 45-pound hydrant, using two 16-foot lines of 2½-inch hose. From here on I'll use a problem taken from "Fire Service Hydraulics," Page 133, Example 150, where the total engine pressure is 201.65 pounds. How can a pumper with the above rated capacity supply a 2-inch nozzle at 100 pounds nozzle pressure, discharging 1189 gallons per minute when its rated capacity at 200 pounds is only 500 gallons per minute.

I understand that 45 pounds from a hydrant added to a centrifugal pump assists the pump. Thus a pumper rated at 120 might discharge at 165 pounds.

Is there enough pressure at the pump to give the necessary discharge?

(*Continued on page* 843)



Our inquiring reporter overhauls the firemanic news of the day

There Is a Santa

Once in a while in this vale of tears something happens to reaffirm your faith in men. Such took place in Papillion, (Neb.) when Fred Mefel, Papillion business man suffered an estimated $25,000 loss from a fire that destroyed most of his coal and lumber yard. Seems that business men of the town agreed to close their shops for one day to help Fred clean up the mess. Sarpy County farmers, it's said, planned to leave their fields the next day to finish the job. Plaudits to Papillion!

* * *

Gave 'em the Bird?

Sooner or later the Fire Department gets the dirty work. In Trenton (N. J.) police went almost complete "ga ga" trying to snare an elusive peacock that had been fitting around downtown buildings for days. All they got was the bird—and we don't mean peacock, either. They tried fire nets, traps, of all kinds and finally called on the Brothers for extension ladders. Came the unlucky bluecoats to join in the chase. More ladders, nets and whathaveyou. Curses! Finally all hands gave up in disgust and sent a representative over to the library to read up on the gentle art of snaring "our feathered friends." The Brothers went home to clean up! According to late reports, the peacock was still at large.

* * *

"Pipe" This 'un

In Allentown (Pa.) Arthur C. Bennis disconnected the pipe leading from the furnace to the chimney in his cellar. That's been done before, but in this case Arthur forgot to tell his good wife about it. Along came Mrs. Bennis with a load of paper which she stuck into the furnace and lighted.

You can guess the rest. Neighbors, believing the house was on fire, turned in the alarm, the Brothers came—took a look—did a bit of ventilating—and went.

* * *

Another Record?

We are indebted for the following interesting happenstance, to William T. Bedell Jr., Captain Crash Crew No. 14, Fort Dix Fire Department, Fort Dix, N. J.—

FIRE ENGINEERING,
New York City
Gentlemen:

I thought you might be interested in a recent experience I had.

While not on the job at Fort Dix I also attend fires with the Good Will Fire Co. of Pemberton, N. J. One morning an alarm was received notifying us that a house was on fire on the edge of the town.

The Chief, myself and another fireman immediately responded with me driving a . . . . pump. Upon arrival at the fire we soon discovered that the pump would not function properly due to a mechanical failure which we later adjusted.

In the meantime, the structure was still burning so the Chief ordered me to go back to the firehouse and get the other pumper.

I commandeered a car and rushed back to the firehouse. I jumped on the pumper and as soon as I got out in front of the house the motor died. Upon investigation I discovered that the truck was out of gas.

I immediately dispatched a man after a can of gas and after a little coaxing I got the truck started and proceeded to the fire.

Upon the basis of this story I claim to be the only man in the State to ever drive two different pieces of fire apparatus from the same fire company to the same fire.

Have I any challengers?

William T. Bedwell Jr.

* * *

Could Ya Call This a "Charged Line"?

Says Tom Magner—A length of 2½-inch fire hose went into action the other day at the Norwich (Conn.) State Hospital for the Insane. But, don't get excited, pards—there was no fire, not even a puff of smoke. Two inmates, Carl Wilson and Edward Dziedzic, got tired of the place, dropped a line from a ward on the second floor through a forced window and slid to the "good earth" below before attachés learned of their absence. P. S.—Yep, they were nabbed later by gendarmes.

P. S.—Reminds us of the time the prisoners in Miami's skyscraper jail house across street from Chief Chase's fire headquarters, used the "house line" to make their precarious escape.

* * *

Pardon While We Pop a Button

From Sgt. I. Goldberg, Army Air Base Branch, Eagle Pass, Texas, comes an item and bit of glorifying we just can't pass up. He writes:

"I receive the FIRE ENGINEERING *magazine each month and I especially enjoy reading your column entitled 'The Watch Desk.' In the August issue I read one of your articles about a man who was driving his car in Stillwater, Oklahoma, and his tires caught fire. I am enclosing a clipping from our field newspaper about a similar incident which happened on this field and may be of interest to other readers of your column. Our base here is located on the Texas-Mexican border and this past summer we had temperatures as high as* 150 *degrees on the ramp.*

"I also think FIRE ENGINEERING *magazine deserves a word of praise for the excellent job it is doing in keeping one well posted on all the latest developments in the fire service.*

(Signed) Sgt. I. Goldberg."

The item referred to by the Sergeant reads:

DID YOU EVER SEE A CIGARETTE-LIGHTER WALKING? SILLY, ISN'T IT? BUT IT'S NO SILLIER THAN SOAKING A PAIR OF SHOES IN GASOLINE, AS ONE ENLISTED MAN HERE DID, AND THEN WALKING DOWN THE HOT RAMP WITH THEM ON. THEY CAUGHT ON FIRE AND THE MAN WENT TO THE HOSPITAL WITH SERIOUS BURNS OF BOTH LEGS."

Thanks, Sgt. Goldberg!

* * *

Hot Off the Tape

Thanks, Chief Kirby, Dayton (O.), and the several others, who sent in that item about the bee hunters touching off a $200,000 fire in Longview (Wash.). . . . The dog house of John Madigoi, Philadelphia (Pa.), burned down in rear yard of his home. Patrolman Edward Basic rescued a large police dog, chained in the house. Mystery is, how could a dog start a fire? Doggone if we know. (Thanks, Brother Spangler). . . . Fire at a Chinchilla breeding farm in Inglewood (Cal.) destroyed 160 pairs of the little fur-bearing animals, valued at $128,000 by their owner. And this is gonna be the country's biggest fur season! . . . "Het up" were the members of the Detroit Fire Fighters Association (AFL) at the very thought they hadda shovel 300 to 400 tons of coal into firehouse bins months after the Board of Fire Commissioners of that city ruled that laborers should be hired for the work. They won their way, and the Board wished the task on the contractor. . . . Storm Lake (Ia.) raised $1,835 by popular subscription so's the fire department could have a utility launch for patrol and rescue work on Storm Lake; she'll do 37 miles per hour (if you can get the gas). . . . Britt (Ia.) has a progressive mayor in Mr. Driste; in the interest of "Britt firemen" he uses the paper to warn the public not to park in front of fire hydrants, race to fires or follow apparatus too closely. . . . *In Dunkirk (N. Y.) reporter Herbert G. Schwartz in search of a story tracked down a fire alarm and found his own house afire.* . . . After a thunder and wind storm silenced the Virgin (N. Y.) fire signal, the barn on the Lefever Farm burned. . . . It doesn't happen often, but when Fire Lieutenant John Sullivan of Truck 12, N. Y. F. D. leaped from a 35-foot ladder to a fire escape, a rung gave way and he suffered a fracture of the right arm. The fire was in a Greenwich Village rooming house and claimed the life of Miss Irene Gallagher, who was burned to death on the top floor. . . . *Suits totaling* $110,000 *have been filed in Superior Court, New Haven (Ct.), two of them by State Administrators against the Ringling Brothers and Barnum and Bailey Shows, Inc., and the City of Hartford arising from the circus tragedy of July 6 last. All suits charge circus management with negligence in treating the tent with paraffin diluted with gasoline. They allege that the circus used a guy rope made of sisal hemp which acted as a wick to the flames and accuse management of neglecting to provide adequate and clear exits.*

For Practical Discussion of Current Fire Department and Fire Management Problems

THE USE OF FOG OR SPRAY NOZZLES

THE discussion in this round table is a continuation of that which appeared in the October issue of FIRE ENGINEERING on the use of fog nozzles.

The generous response from our readers made it necessary to carry the discussion over to this issue.

Readers are invited to send in their comments on this subject or on next month's subject which appears in the box on the following page. Address communications to Round Table Editor, FIRE ENGINEERING, 24 West 40th Street, New York 18, N. Y.

Discussion of the Question

Thomas M. Lane, Chief, Alameda, Cal.: In 1896, under a patent issued to Hans Peter Nielson, who at that time was an engineer operating our steam fire engine pumper, a fire stream nozzle was developed which embodied the principle of being equipped with a spray and straight stream, either one being optional at the wish of the operator of the hose line.

The nozzle was constructed of aluminum so as to be light in weight and was manufactured for use on 2½-inch and 1-inch hose lines, the 2½-inch having one spray and two straight discharges, and the 1-inch having one spray and one straight discharge.

These nozzles were used in our department up to the year 1920, at which time they were discarded. Due to the softness of the metal used in manufacturing them, they were easily bruised with the result that the control valve, which was of the swing taper plug type, would at times freeze because of the high pressure used. This would make it difficult to operate the nozzle in its swing movement.

I used this nozzle at the time I entered the department in 1909 and can state that, aside from the trouble mentioned above, very good results were obtained on various fires; also on entering heat zones in protecting the firemen while getting to the base of the fire.

Regarding the present type of fog nozzles, I introduced fog nozzles in our department of the type which were in use at that time, and since then we have used combination fog nozzles both on our booster lines and on our 1½-inch hose lines, which are equipped with applicators. Depending on the type of fire and its magnitude, we have had very wonderful results, both in less water damage and quick action in extinguishment. We use them on building and petroleum fires.

Of course the pattern of the nozzle has a great deal to do with its efficiency, but I know from personal experience and from the results obtained by fire departments, that fog nozzles have a very definite place in the fire extinguishment field. However, they are not a cure-all in extinguishing all fires outside of those which can be extinguished with a blanketing stream, as they do not have any great penetration or any great amount of heat absorption.

Joe Carmichael, Chief, Little Rock, Ark.: We use fog nozzles infrequently. They appear to be effective if method of using them is known. Men in this department have not been trained to use them.

They have been used on shingle roof fires where the spread of the fire was extensive, and in some interior fires. We have found that the nozzle has not furnished as much air for the men on the nozzle as has been claimed, but has the effect of drawing smoke around edges and blowing the fire.

I have found that in heavily charged basements the men are usually striking out blindly and prefer the use of solid streams. Fog obstructs the view of their activities in any event.

M. G. Bennett, Chief, Orlando, Fla.: We use fog nozzles very extensively and find them to be very effective for certain types of fires. We use them on small inside fires such as in residences, stores and office buildings; also for small gasoline and other oil fires.

One of the great advantages of fog nozzles is that there is small damage from water. We have also used the fog nozzle as a fire smoke ejector on small fires, where there is more smoke than fire. The same would apply to basement fires that have not gained such headway as to make imperative the use of solid streams.

Sam J. Crow, Chief, Decatur, Ill.: Almost all of our first line hand nozzles are of the combination spray and straight stream type. We find them most effective on fires that have not gained much headway and especially on oil or grease fires.

The spray nozzle has the advantage over the solid stream nozzle in operating on smoky fires. The spray reduces the heat and toxic gases as well as extinguishes the fire, when working at close range on an inside fire in a basement or otherwise. Also the water damage is much less when spray is properly applied.

Louis A. Travis, Chief, Lexington, Ky.: We have used fog nozzles for several years on our No. 1 pump. It is first in action at all fires where a 2½-inch line is necessary.

We use a combination solid stream or spray nozzle and have found it to be very effective especially where it is necessary to switch the stream from spray to solid. We have used this nozzle effectively on oil fires where a washing effect is desired and also on small gasoline fires at garages. We have also had good results when using it at smoky fires in basements. The cooling effect of the spray is an advantage over the solid stream as it does much to help the firemen advance the line. Much water damage is eliminated when the fog nozzle is used.

Stuart Potter, Chief, Greenwich, Conn.: We use fog nozzles principally on booster and 1½-inch hose and have found them effective on small liquid fires, and fires in mattresses, upholstered furniture, automobiles, rubbish, etc.

Fog nozzles cool the surrounding atmosphere and control the fire with a minimum of water, thereby reducing water damage.

Bradley Stinson, Chief, Anderson, Ind.: We use spray nozzles extensively on Class B fires and to eliminate smoke and screen the men from the heat. They have proven very effective.

George J. Gmeiner, Chief, Orange, N. J.: This department has three fog nozzles, but to date have had not occasion to use them.

Frank A. Northcutt, Chief, Covington, Ky.: We have frequently used fog nozzles on basement fires and fires in homes where the smoke is very dense and quarters are close. We have found them very effective in that the fog created will drive smoke and heat alike back and at the same time create a wide range of water that will cover a large area; also the water loss has been found to be much less.

Oil fires are practically all extinguished with the spray. It smothers an oil fire very quickly when used on a 2½-inch line with sufficient pressure to create a heavy spray. It will not spread the fire or push it from you as a solid stream will do. Quite often we have found that a solid stream instead of extinguishing an oil fire will spread the fire and make it much harder to handle. Such is not the case when spray or fog is used.

Waldo Merrill, Chief, Council Bluffs, Ia.: Fog or spray nozzles have not been used to any great extent in this department in the past, but will be tried on various types of fires hereafter.

HERE IS THE QUESTION

To what extent do you use spray nozzles (fog nozzles) in your department?

Have you found them effective?

On what types of fires are they used?

What advantages do you feel they possess over solid stream nozzles in operating on basement or other inside fires that have not gained such headway as to make imperative the use of solid streams?

One of our captains has used a fog nozzle on his booster line in fighting automobile fires with good success. We have also used fog nozzles on 2½-inch lines to enter buildings where intense heat and smoke have prevented the men from getting to the seat of a fire.

Just recently I tried extinguishing oil fires with three types of fog nozzles and with applicators. These seemed to work very satisfactorily and quickly on small fires. I believe these nozzles will be used with great success on a majority of fires in the future.

I believe the use of high velocity fog will be used in combating basement, attic and other types of fires in buildings in place of solid streams. It must be remembered, however, that solid streams and low pressure fogs still have their place in extinguishing fires.

John M. Slocum, Chief, Huntington Park, Cal.: We are using spray nozzles in our department on all 1½-inch lines and also on all booster lines. I believe I would be safe in saying that we extinguish about eighty-five to ninety per cent of all fires with fog nozzles.

We have trained all our men in the use and handling of fog streams, and we feel these streams are 100 per cent effective when used properly.

We are using fog streams on all types of fires, namely, building, paints, oils, etc.

The advantage we find fog nozzles possess over straight streams is that less men are required to handle lines of hose. They also protect the men from excessive heat. Less water damage is done when extinguishing fire. They may be used to drive the heat, smoke and gases from basements and inside fires allowing the firemen to work more freely.

William F. Carleton, Chief, South Gate, Cal.: The South Gate Fire Department for a number of years past has proven to itself beyond a doubt the value of fog nozzles.

We have found them effective. Forcing entrance into a building that may be fully involved, an entrance is made with one fog nozzle and one line equipped with a straight stream. We find at the time of forcing entrance, the fog nozzle gives us about a 16 to 18 foot spread of fog, which has a tendency to lay the fire back and to absorb heat from within the room, thereby reducing the temperature. This entrance can be made fairly rapidly. The straight stream nozzles going in with the fog nozzles are used for knocking down the heavy fire. However, at this point, I might state that our fog nozzles are dual; they are equipped so that you may use fog or straight streams. From this, you will note that, if necessary, two straight streams can be applied to the scene of the fire, then cutting back to the fog nozzle for cooling down.

We employ fog nozzles on all types of fires.

We recently answered an alarm for a fire in a double garage with one engine company. Upon arrival at the scene, it was noted that the inside of the garage was fully involved and burning out through the roof. This garage was equipped with the overhead type of door. Members of the engine company set about to raise the door. Reaching down and forcing their fingers under the bottom, they raised the door. I picked up the hose line and had it in position to attack the fire. As the door was raised, the fingers of two of the men were burned, but they heaved the door up into an upward position and turned it loose.

Then, I advanced into the garage with a fog nozzle with a spread of 16 feet, laying the fire back. Due to the intensity of the heat within the garage, the springs of the door had loosed their tension and allowed the door to fall back down in a closed position trapping me in the garage.

Had it not been for the fog nozzle, I would have been severely burned. The sixteen-foot spread of the fog served as a curtain between me and the fire until the door was reopened.

I have found in this type of fire that by using the fog you can very rapidly absorb the heat from the burning material, reducing the temperature below its ignition point.

L. B. Barnum, Chief, Phoenix, Ariz.: We use spray nozzles in this department to extinguish gasoline, oil and grease fires in hoods of restaurants; also use them in small rooms to cut down water damage and to dissipate smoke from basements where there would be no water damage. We have found them effective.

On small fires they can be used without causing the water damage that straight streams do.

Henry L. Hilles, Chief, Tucson, Ariz.: We carry spray and fog nozzles for 1, 1½ and 2½-inch lines on all trucks for use on oil, grease, tar and other flammable liquids fires; inside fires, fires in grease ducts and also in grass and weeds. They are also used to clear the atmosphere of smoke. We have found that fog nozzles cut water damage.

L. A. Moore, Chief, Fresno, Calif.: We use fog nozzles on exposure fires and find that they keep water damage down to a minimum.

Fog is very effective in protecting firemen against heat and exposure.

High pressure fog will keep the water damage down in attic and other home fires.

I believe that all fire departments should be equipped with high pressure fog after the war.

M. J. Brun, Chief, Fort Smith, Ark.: We have not had very much experience with fog nozzles.

Most of our calls for this nozzle have been for removing smoke from basement fires. We have not had any large oil fires to use them on.

From our experience the nozzles have a great place in fighting basement and inside fires.

John F. Moroney Chief, Meriden, Conn.: For several years this department has used spray or fog nozzles.

We have found them effective on several occasions for extinguishing fires and approaching the heart of the fire. We use them on oil, gasoline, automobile, basement and inside fires.

A fog, or spray, applied over a wide area does not spread the fire but cools it off quickly below its flash point and snuffs out the blaze with less water than it would take to extinguish the fire with a solid stream, thereby keeping the fire loss and water damage to a minimum.

HERE IS THE QUESTION FOR THE NEXT ISSUE

Today tens of thousands of young men in the armed services are being given instruction in fire fighting.

When the war is over and these men return to civil life, in what way, in your opinion, will their training be helpful to the fire service?

(Editor's Note: The contributions of men in the armed forces who have fire fighting assignments will be welcomed. Send them in, men!)

Fire Prevention Float Used in Baltimore

This is the float used in Baltimore, Md., during Fire Prevention Week, October 8-14. Every effort was made to acquaint the public generally with fire prevention activities, in the hope of cooperation as a preventive against loss of life and unnecessary destruction of property. Chief Howard Travers heads up the Baltimore Fire Department.

FALSE ALARMS

"Boy, Am I Tired . . . Had to Stand All the Way in on the Bus This Morning!"

Captain: "Now, suppose you are on duty one very dark night. Suddenly a person appears from behind and wraps two arms around you so that you can't use your rifle. What would you say?"

Cadet: "Let go, honey."

Hey, What Gives?

I saw her in a bathing suit;
My joy description begs;
I never saw such lovely slim
And most bewitching arms.

A woman who fasted for 62 days,
To prove that the stunt could be done,
From hundreds of Scotsmen had letters of praise,
And proposals from seventy-one.

Sandys Solution

A Scot who had ordered some meat from the butcher for his cat came rushing in later to cancel the order.

"What's the matter?" asked the butcher. "Lost your cat?"

"No," answered Sandy, "he's just caught a mouse."

Say the Word

A woman when launching her first ship was a little nervous. She turned to the shipyard manager, standing beside her, and asked: "How hard do I have to hit it to knock it into the water?"

Private: "Hey, Sergeant, there's no turtle in this turtle soup."

Sergeant: "No, and if you look close, you'll find there's no horse in that horseradish."

Now She Knows!

Old Maid: I can't decide between the divan and the arm chair.

Clerk: Lady, you can't make a mistake on a nice comfortable chair like this.

Old Maid: O.K., then. I'll take the divan.

This Young Generation

Two little mites of about six and seven respectively were gazing with considerable interest at the storks in the zoo, when the usual interfering old lady ambled up.

"Those are storks, my dears," she purred. "The clever birds that brought you to your mother and father!"

The youngsters looked at one another and one whispered: "Poor old thing! Shall we tell her?"

Two stenographers were airing their troubles. "I'd like to get a divorce. My husband lives in Ohio and I'm here, and we don't get along."

"Why don't you sue him for incompatibility?" asked the other sympathetically.

"I would if I could catch him at it."

"Do you act toward your wife the same as you did before you were married?"

"Just the same. I remember when I first fell in love with her. I would lean over the fence in front of her house and gaze at her shadow on the curtain, afraid to go in. And I act exactly the same way now."

Actor: "So you're going to use me in your next play? You've really discovered at last what I am!"

Director: "Yeah, hurry up and get into the hind legs of that stage horse over there."

Today's Greatest Fire Fighter Value!

A mighty mite for fire protection! *S.O.S. Fire Guard* is America's great utility fire extinguisher. Patented Safety Phlare design insures *new* pump action at all times. Free-floating piston cannot stick.

S.O.S. Fire Guard is fast, sure protection against electrical, chemical, oil, gasoline fires. Its vaporizing liquid instantly kills flame, guards against post-ignition hazards. Handy bracket makes installation easy in plant, truck, car, plane, boat, home, or office. Convenient 1 and 1½ quart sizes.

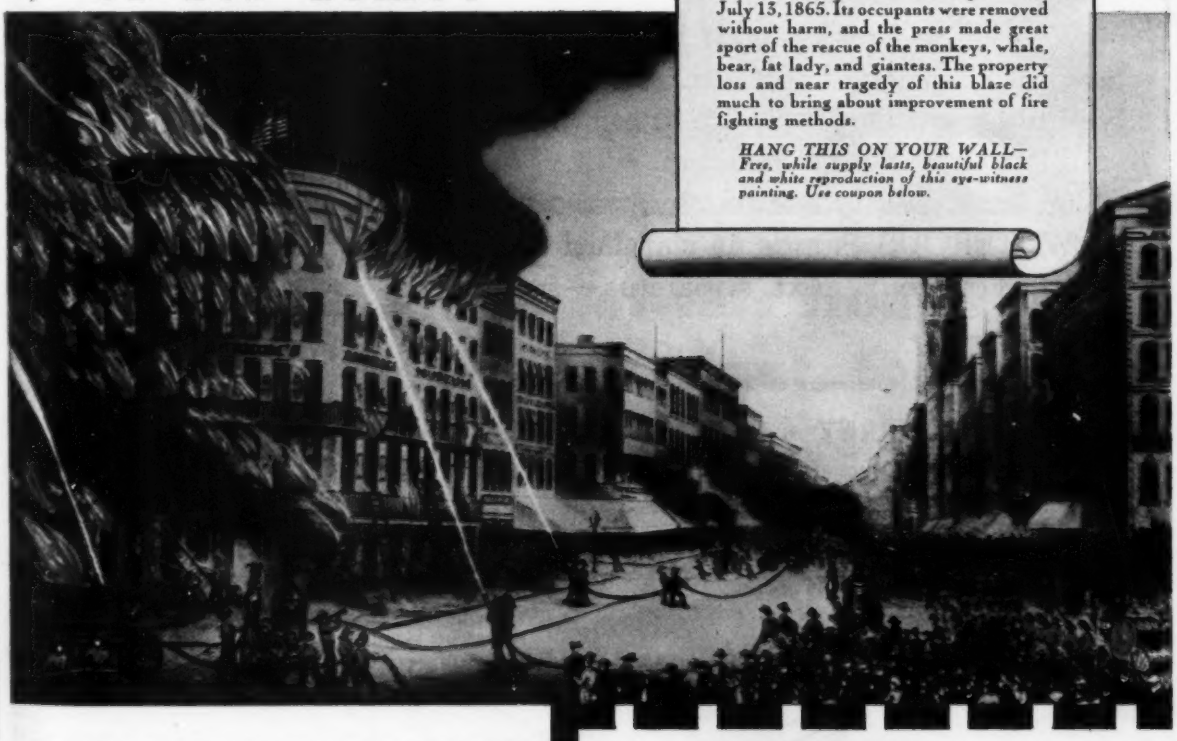
S.O.S. Fire Guard is one of a famous family of dependable fire extinguishers quality mass produced by General Detroit since 1905. For details mail coupon today.

The Greatest Fire of Its Time!

THE BURNING OF BARNUM'S MUSEUM

Home of the world's most fascinating freaks and oddities, Barnum's Museum in New York City burned to the ground on July 13, 1865. Its occupants were removed without harm, and the press made great sport of the rescue of the monkeys, whale, bear, fat lady, and giantess. The property loss and near tragedy of this blaze did much to bring about improvement of fire fighting methods.

HANG THIS ON YOUR WALL— Free, while supply lasts, beautiful black and white reproduction of this eye-witness painting. Use coupon below.



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☐ Please send me a free black and white reproduction of the famous C. P. Cranch painting, "The Burning of Barnum's Museum."

☐ Include descriptive literature on S.O.S. *Fire Guard*

Name_____

Title_____

Attach this convenient coupon to your letterhead and mail. (1102)

IT'S a WOOD PUMPER Engineered for Efficiency

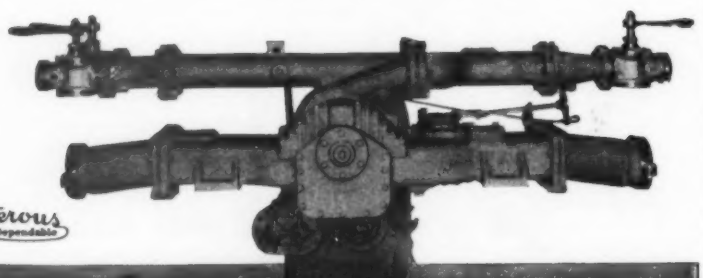
A typical WOOD Fire Truck, equipped with WATEROUS 600 G.P.M. Centrifugal Fire Pump.

● Wood Fire Trucks, built by Wood Engineering Service, Topsfield, Mass., are favorably known for their fire fighting ability and long life. Your satisfaction with a Wood Pumper is doubly assured by their choice of WATEROUS Pumps as standard equipment. For *your* next apparatus—specify WATEROUS.

Literature on Request

WATEROUS COMPANY · ST. PAUL, MINNESOTA

Also Manufacturers of WATEROUS Fire Hydrants



Waterous Dependable

WATEROUS

CENTRIFUGAL-ROTARY

FIRE PUMPS

Lessons To Be Learned From Large Fires

(*Continued from page* 803)

enter opened bulkheads and windows ignite awnings, washing on clothes-lines, and even trees. Flying squads should be detailed as quickly as possible to patrol endangered areas, and inspect buildings in the path of the fire, to close windows and other openings, guard special hazards, prevent citizens from ineffective and indiscriminate use of lawn hose and institute protective measures. Wet blankets spread on windward sides of shingle roofs, and kept moist with aid of buckets, pump-tanks or small streams, are effective. Pump-tank extinguishers are useful also to extinguish incipient roof, awning and grass fires. An essential is sufficient ladder equipment and it is well to call for ample reserves of ladder trucks to get fire fighters onto roofs.

The advent of the booster tank and pump with small hose has proved a boon for these fire fighting operations. In earlier days, reliance was placed on the old chemical tanks on ladder trucks, and "chemical wagons," but while effective in a limited way, the modern booster equipped pumper is much superior. Where two or three such rigs are employed at a fire to protect exposures, it has been found advisable to use them in rotation. As rapidly as one exhausts its water supply another takes over, while the first returns to the nearest source to load up. City sprinkling vehicles, and even oil tank delivery trucks, have been employed as adjuncts to the fire fighting forces, in this connection.

Millions of civilians have been trained in the use of first aid fire fighting equipment as part of civilian defense. This training may stand them in good stead in the event of conflagration.

Watch Windward Side as Well

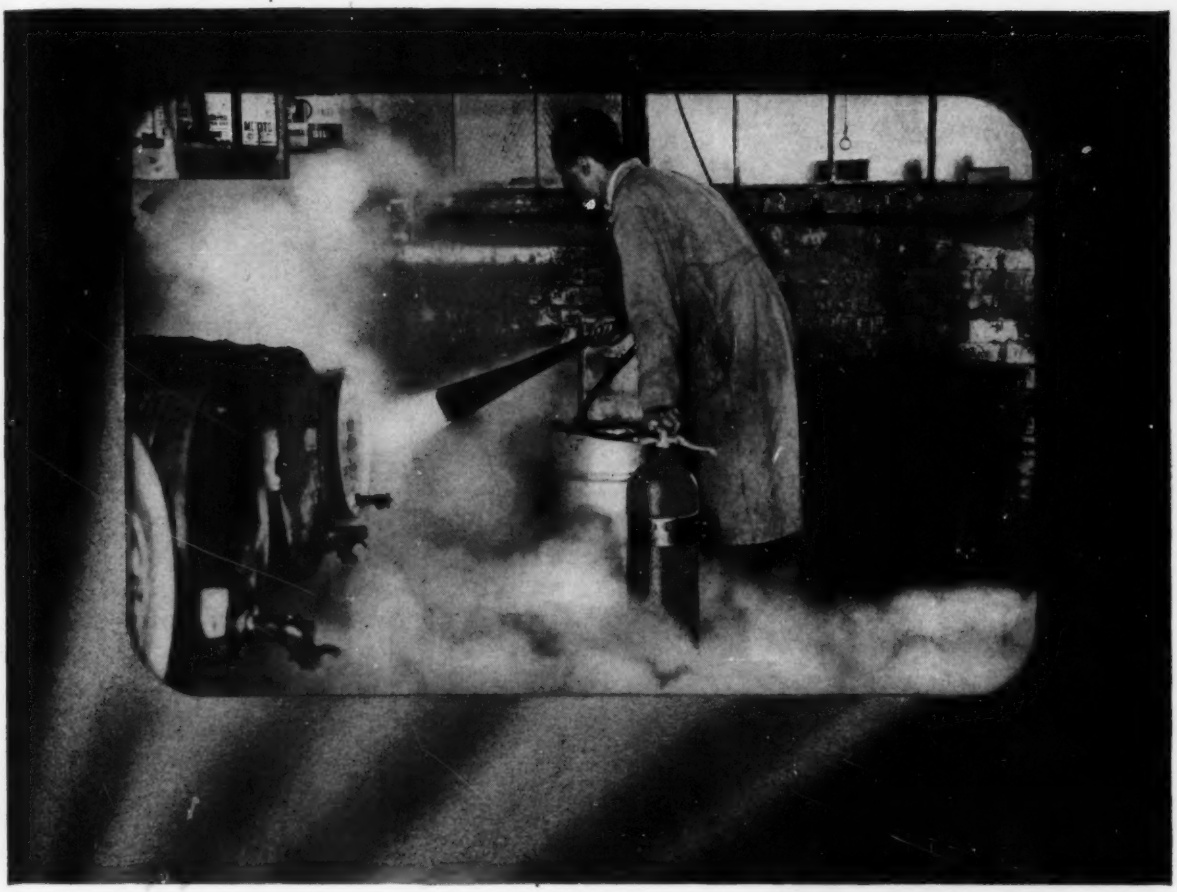
Fire has a habit of traveling against the wind and of shifting its course suddenly. Furthermore, the large fire creates its own air currents and a chief may find himself caught in the rear by a sudden shift in the direction of the wind. This happened at the Palisade Amusement Park fire described in the September FIRE ENGINEERING. This fact prompts the suggestion that forces be deployed so that **all** sides of the fire may be covered, or at least be prepared for any dangerous shift in the wind.

Dividing the Fire Force

From the lessons gleaned in this country and the London "blitz," once the local forces are deployed to fight a large fire, it is not very good practice to attempt to divide them—to "pick up" and shift some, or to spread them out too thin, in an effort to relocate forces in order to fight the spread at some other point. It appears advisable to entrust this task to incoming forces. This obviates delay in picking up and moving men and equipment, brings fresh men where they are needed, and only requires *early* calling for aid.

Driving Men

Normally, throughout most sections of the country, ample manpower can be rapidly mobilized in time of large fires so that it should be unnecessary to drive



The villain of this film threatens your plant, too!

FIRE, the saboteur, can destroy your plant — even though you've installed the most modern fire-fighting equipment! If your men don't know how to operate it, or if they use the "right" equipment against the wrong fire, disaster can easily result.

Believing that visual instruction is easiest understood, longest remembered, Walter Kidde & Company have produced a color film with sound. It shows exactly what to do when fire strikes. It pictures the different classes of fire, shows how to fight each of them. It's fast-moving, grips the attention of its audience during the twenty minutes of its run.

We'd be glad to show this film to key men at *your* organization. There is no obligation whatever for this service. Just drop a line today to the address below and we'll arrange a showing at your convenience.

WALTER KIDDE & COMPANY, INC., 140 CEDAR STREET, NEW YORK 6, N. Y.

It will help you if you will mention FIRE ENGINEERING *when writing advertisers*

men beyond the limit of endurance. Even with the manpower shortage of the present, it is possible to mobilize fresh men to operate at any large scale fire providing some sort of mutual aid pact exists. In many of the fires of yesteryear, firemen were compelled to work without relief until they dropped. That condition need not exist today providing a chief in charge anticipates the battle on his hands and plans accordingly. With Red Cross and civilian protection forces still extant in many parts of the country, there is ample assistance awaiting him, if he will make his wants known.

Dynamiting and Demolition

Our study of numerous fires in which attempts were made to utilize dynamite or other explosives indicates their questionable value. In some cases they have definitely aided the spread of the fire. In all events, explosives should be used only under the direction of competent experts and then as a last resort. It appears to be the consensus of opinion to "leave them alone."

Supplies of Gasoline and Oil

Except in the metropolitan fire departments, there are no fuel supply trucks in the fire service. Chief officers should know beforehand not only where reserve fuel and oil are available, but how to get and transport them, and whose responsibility it shall be to do the job. Mutual Aid and Disaster plans should anticipate heavy demands for the right kind of fuel and lubricants, and provide accordingly.

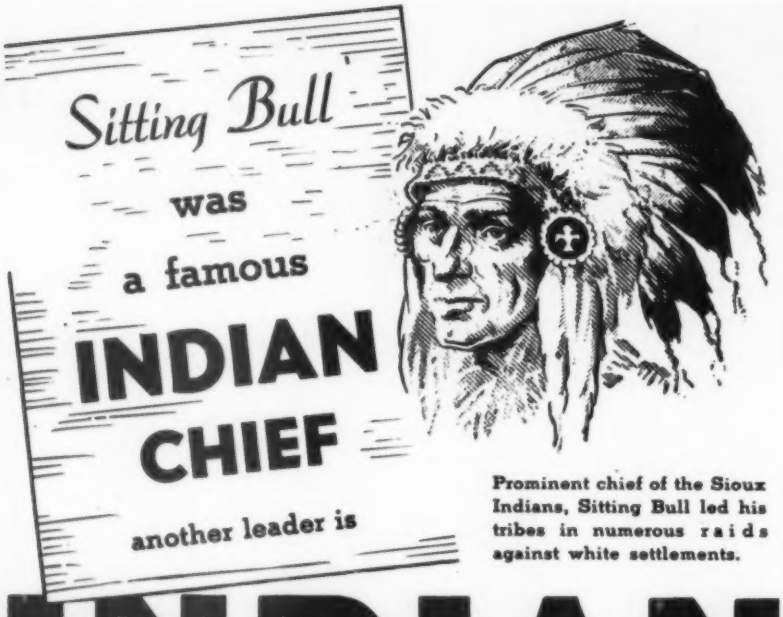
First Aid Stations

Just as there should be a fixed G.H.Q. of command for directing fire operations, so there should be a fixed first-aid headquarters. Ambulances, doctors, with the necessary first aid equipment, inhalators, oxygen, etc., should be available and contact maintained with nearest hospitals. History of past fires indicate that in some cases no provision was made for casualties, with the result that injured firemen and citizens were rushed into stores or private homes, and some delay elapsed before they were hospitalized. It has also happened that in the rush and excitement of a big fire, with no established first-aid stations, injured were moved without their names and addresses being recorded. The result was needless confusion and distress.

Another factor of importance is the problem of drinking water for firemen. In a number of fires, firemen were made ill by drinking water out of fire hose nozzles. Men should be cautioned not to drink any but water that has been approved by medical authorities, especially when operating in strange territory.

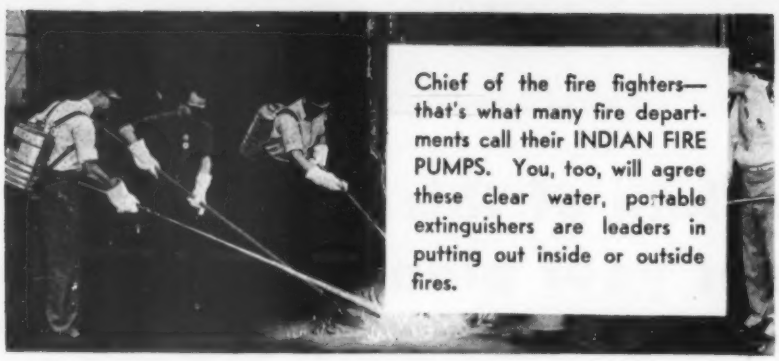
Marked Hydrants

Officers in command of incoming fire forces usually take it for granted that the hydrant they are told to use will supply the water necessary for their line or lines. It has been known to happen, however, that after stretching in and hooking up to the hydrant, they are unable to get water because they were on



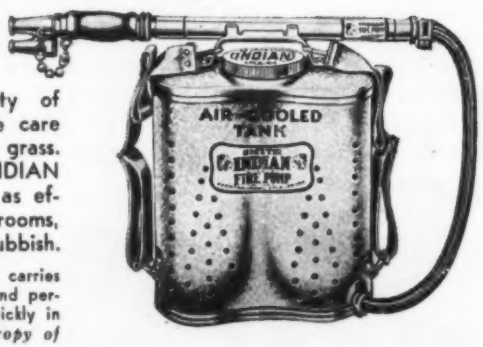
Prominent chief of the Sioux Indians, Sitting Bull led his tribes in numerous raids against white settlements.

INDIAN Fire Pumps



Chief of the fire fighters—that's what many fire departments call their INDIAN FIRE PUMPS. You, too, will agree these clear water, portable extinguishers are leaders in putting out inside or outside fires.

ORDER NOW for those troublesome fall fires!



Be sure you have plenty of INDIANS on hand to take care of fires in dry leaves and grass. And don't forget — an INDIAN FIRE PUMP will work just as effectively on fires in roofs, rooms, furnishings, partitions and rubbish.

The big rust-proof 5 gal. tank carries on the back leaving arms free and permitting a man to get about quickly in fighting the fire. *Send for a copy of our catalog.*

D. B. Smith & Co. • 406 Main St. • Utica 2, N. Y.

Pacific Coast Branch: Hercules Equipment & Rubber Co., 435 Brannan St., San Francisco, Cal.

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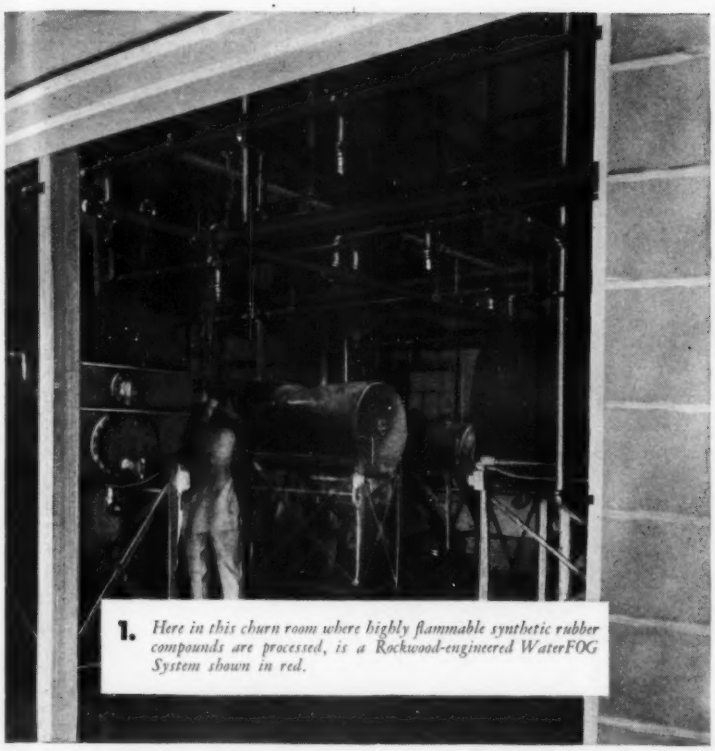
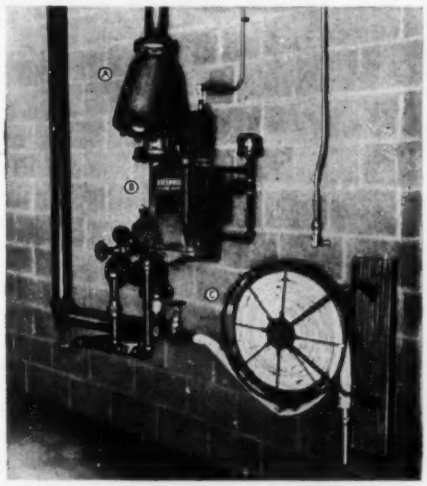


1. *Here in this churn room where highly flammable synthetic rubber compounds are processed, is a Rockwood-engineered WaterFOG System shown in red.*

2. *And this shows the Rockwood installation being tested. Notice how cooling, confining, smothering WaterFOG completely fills the room.*

3. *Here is the automatic control valve device which detects a fire and starts the fog. (A) Rockwood Strainwell Unit. (B) 2½ inch Rockwood Deluge Valve. (C) Auxiliary WaterFOG type N-22 nozzle, fire hose and hose reel.*



Why ROCKWOOD WaterFOG

SYSTEMS ARE SELECTED FOR CRITICAL WAR PLANTS

By impinging streams of water at a predetermined angle, Rockwood specially-designed equipment produces a most efficient WaterFOG pattern for fighting oil fires. Its myriad of tiny particles covers a broad area . . . ideal for places like the churn room above.

Every gallon of water changed to Rockwood WaterFOG absorbs about 8000 B.T.U's . . . remarkable cooling action for such a small amount of water. Then, as each gallon turns to steam, it occupies at least 230 cubic feet of space . . . choking off oxygen, snuffing out flames.

The most efficient installation of WaterFOG requires the specialized knowledge and background of Rockwood engineers. It is influenced by several important factors: the characteristics of the hazard itself, water supply, etc.

Rockwood-engineered systems in the form of fixed piping installations, approved by Underwriters' Laboratories and Associated Factory Mutuals. Nozzles and applicators for fire hose lines also available—used by Army, Navy, Coast Guard, U. S. Maritime Commission and hundreds of Industrial Plants. Write for Bulletin 123.

TYPICAL WaterFOG APPLICATIONS ARE:

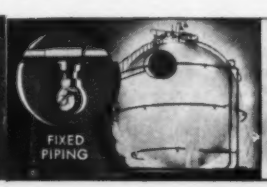
quench and dip tanks	oil switches
paint shops	dryers
control rooms	oil storage, etc.

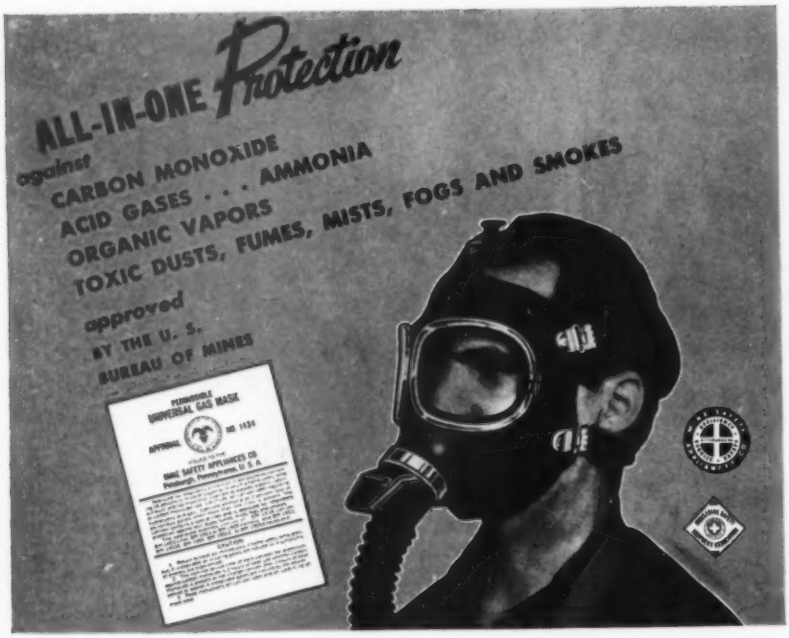
ROCKWOOD SPRINKLER COMPANY
54 Harlow Street, Worcester 5, Mass.
Specialists in Fire Protection Engineering Equipment and Installation since 1907

Water Engineered by Rockwood Cools, Confines, Smothers Oil Fires

ARMY E NAVY

ROCKWOOD WaterFOG





M·S·A *All-Service** GAS MASK
WITH MODEL S CANISTER . . .

Model S Canister with Standard Canister in background

The M.S.A. All-Service Mask with Model S canister meets the fireman's respiratory protective requirements against poisonous industrial gases, toxic dusts, mists, fumes, smokes, etc.—singly or in combinations (including carbon monoxide); is officially approved by the U. S. Bureau of Mines, and offers maximum comfort and convenience in service. Special features of the canister are its uniquely-designed large-area filtering element for smokes and fumes—and lower resistance to breathing.

The M.S.A. All-Service Mask is equipped with the famous All-Vision facepiece, which allows unobstructed vision at all angles, fits comfortably without drawing or binding, and affords a perfect gas-tight seal. Complete working freedom is permitted by the strong, durable harness, which is easily and quickly put on or removed.

Both the Model S All-Service Mask canister and the Standard All-Service canister are interchangeable in the harness. A strongly constructed fiber carrying case accommodates the mask equipped with either canister, together with a spare. To adapt All-Service cases now in use for the Model S canister, it is necessary only to remove a small fiber bracket. Write for complete details on the M.S.A. All-Service Mask with Model S and Standard canisters, in descriptive Bulletin No. EA-8!

*Trademark Reg. U. S. Pat. Off.

MINE SAFETY APPLIANCES COMPANY
BRADDOCK, THOMAS AND MEADE STREETS · PITTSBURGH, PENNA.
District Representatives in Principal Cities

a dead-end, or under-sized main, or there are too many pumpers operating off the main in question.

A system of marking hydrants to indicate normal capacities, or flow, either by numerals or color may be very helpful in time of large fire. Incoming officers will naturally fight shy of a hydrant they know to be on a four-inch main or one which is so marked as to indicate limited or inadequate supply (as in the case of a dead-end). The time to know about water supply is before the lines are stretched and the pumper hooked up. Time taken to be sure of adequate water *before stretching* in may save valuable time later. Whatever system of marking is adopted, it should be familiar to all the neighborhood fire forces.

It is a good plan to have distinctive markings or colorings for hydrants of different communities. Fires on the boundary line of different communities may necessitate utilization of the water supply of both and if hydrants are distinguishable so as to be easily identified the work of the firemen may be greatly facilitated.

Value of Inspections

Our study shows that more thorough inspections would have prevented much loss, if not actual conflagrations. In some cases after inspections and recommendations had been made by the fire department, no appropriate action was taken; in others, no inspections and no recommendations were made.

In Salem (Mass.) the water supply was known to be inadequate; in Augusta (Ga.) baled cotton was permitted to line the streets, blocking buildings and hydrants; in Atlanta (Ga.) the city allowed wooden shacks and sheds to be located in and near the high value district, in spite of warnings. In nearly all cities, about the time of these fires, there was laxity in enforcing ordinances particularly those having to do with wooden shingles. In other cities where they had serious fires, there was difficulty and delay due to lack of standardization of hose threads. The chiefs of departments where these fires occurred were in some cases blamed for conditions which were none of their fault—and which they had attempted vainly to correct. It was—and still is not uncommon to find recommendations and warnings issued by the fire department pigeonholed. As long as this condition exists, we shall have large fires—and conflagrations.

Fire Losses in Watetown, N. Y.

A statistical record of fire losses in Watertown, N. Y., recently compiled by Chief Joseph T. Dibble, shows that damage by fire in the city has amounted to $1,452,189.11 over a period of 14½ years. The figures cover the period from 1930 to June 30, 1944.

Total loss for the first six months of this year was $23,344.85 while the average loss in the past 14½ years has been approximately $100,150 annual.

The fire loss by years follows: 1930, $69,809.73; 1931, $65,958.21; 1932, $190,467.12; 1933, $59,162.90; 1934, $256,104.27; 1935, $134,877.02; 1936, $68,824.52; 1937, $79,083.63; 1938, $34,705.75; 1939, $82,575.73; 1940, $102,160.75; 1941, $89,262.86; 1942, $109,404.36, and 1943, $95,447.41.

SANFORD D. DEWEY.

SEAGRAVE *Safety Steel* AERIAL LADDER

The Seagrave All-Steel Aerial Ladder is safe, quick and efficient. Every inch is thoroughly welded to provide greater strength . . . no holes, bolts or rivets to weaken the structure. . . . Each extension section equipped with safety locks. . . . Never failing hydraulic power raises, lowers, extends, retracts and rotates the ladder . . . all movements controlled by one man.

THE GREATEST NAME IN FIRE APPARATUS

THE SEAGRAVE CORPORATION
COLUMBUS, OHIO
Bickle-Seagrave, Ltd., Woodstock, Ont.

Here's the

Quicker, Safer Way to Put Out Fires

The Universal Nozzle provides the *quicker* way to put out fires because the hoseman can change the type of stream in an instant for any sudden change in fire conditions. The Universal Nozzle provides the *safer* way to put out fires because it can put a 130 degree water curtain between the hoseman and the flames . . . also in an instant . . . while retaining a solid stream, if desired. The Universal is the versatile nozzle, proved by seven years of actual use under all conceivable conditions.

Solid Stream • Fog • Water Curtain
or Any Combination
with

The **UNIVERSAL NOZZLE**

Satisfied Users Include

The U. S. Army and Navy at their air stations, the U. S. Coast Guard on its vessels, in addition to industries and municipal fire departments everywhere.

Write for Details

Inquiries about this remarkable nozzle are invited. Dealers, industries, and fire departments will be sent full details without any obligation.

L. N. CURTIS & SONS
Emergency Equipment
451 Hudson St.
OAKLAND 9, CALIF.

A versatile
BATTERY CHARGER

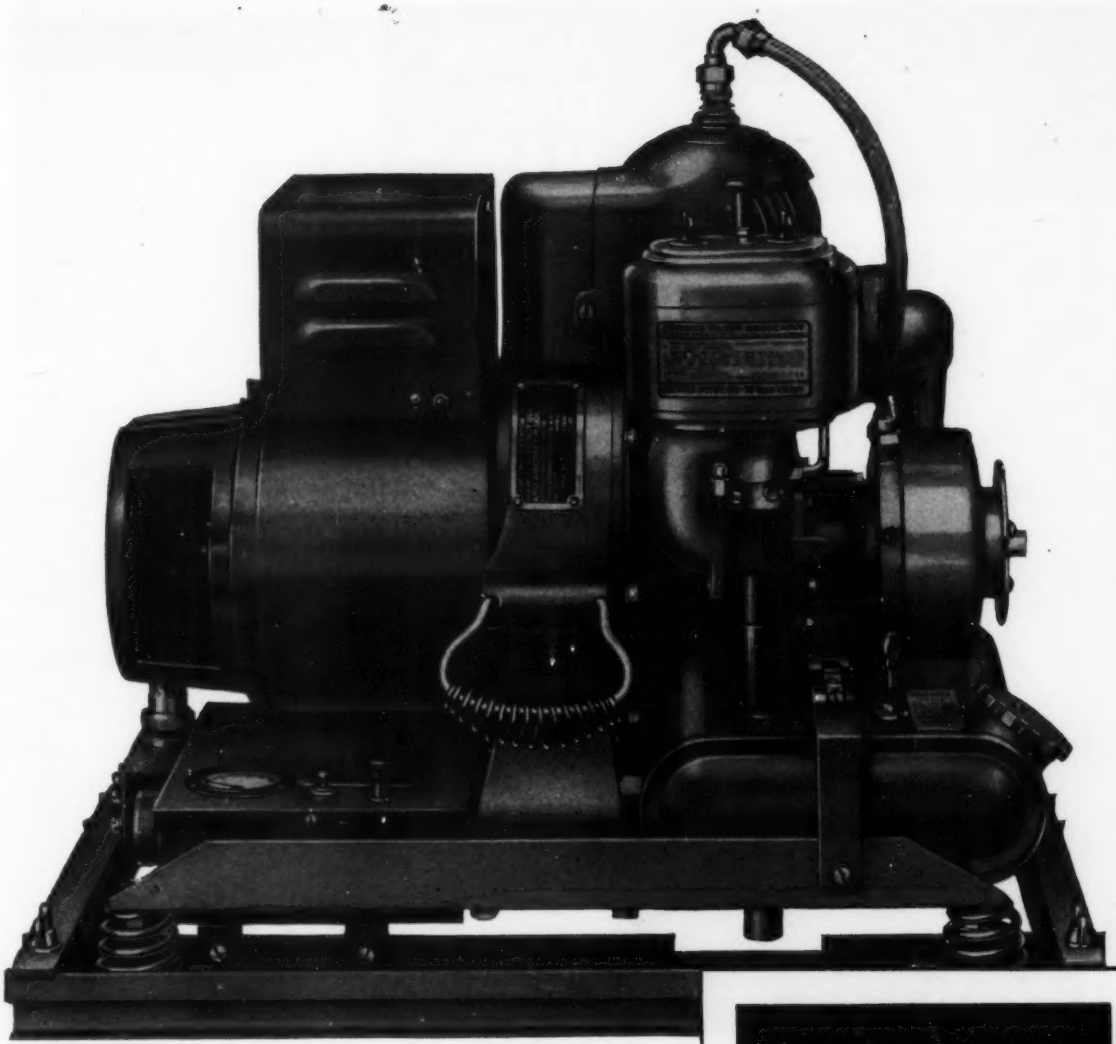
This Full-wave Tungar is a truly versatile battery charger. At 2 to 6 amperes it will handle twenty-four 6-volt batteries, or twelve 12-volt batteries, or six 24-volt batteries. At 2 to 12 amperes it will handle twelve 6-volt batteries, or six 12-volt batteries or three 24-volt batteries. It is a strong, toughly built unit designed for fast, one-day service. It will give a fast or slow charging rate or a combination of both. And it's economical, highly efficient and very easy to operate. Address inquiries to Section 4-58, Appliance and Merchandise Department, General Electric Co., Bridgeport, Conn.

GENERAL ELECTRIC

What's Burning

THE following list includes fires of $50,000 loss and over in the United States and Canada, for the month of October, 1944. These figures, compiled from the telegraphic reports, are based on estimates made at the time and are subject to later investigation and consequent revision. Taken as a whole, however, they are an approximately correct view of the losses incurred. The figures represent losses in thousands of dollars.

Month Ending October 31, 1944	Losses in Thousands of Dollars
Litchfield, Conn.—St. Anthony's Roman Catholic Church damaged	80
Berkeley, Mich.—Bill's Barbecue destroyed	60
Woburn, Mass.—A. L. Varney plant destroyed	50
Atlanta, Ga.—Plant of Case & Co., reconditioning gasoline drum plant destroyed	50
Chicago, Ill.—Bldg. of Mutual Baking Company damaged	50
Monroe, Mich.—Monroe municipal sewage disposal plant damaged	50
North Rochester, N. H.—Three-story Spaulding Fibre Mill destroyed	650
Klamath Falls, Ore.—Shaw Lumber Co. destroyed	170
Spokane, Wash.—Long Lake Lumber Co. destroyed	80
Roanoke, Va.—Feed mill of Roanoke City Mills, Inc. destroyed	225
Babson Park, Fla.—Packing plant of Babson Park Cooperative destroyed	50
Hagerstown, Md.—Bldg. occupied by McEwen Furniture Co. and B. A. Stickell & Sons destroyed	60
Charleston, S. C.—Banana unloading wharf and 17 empty refrigerator cars of United Fruit Co.'s dock destroyed	125
Maywood, Cal.—Western States Lacquer Co. destroyed	50
Cedar Rapids, Ia.—Cedar Rapids plant of Cargill Feed Mill Co. destroyed	250
McMinnville, Ore.—Buchanan & Cellers grain elevator destroyed	60
Anacortes, Wash.—Niderost & McDonald fish reduction plant destroyed	60
East Chicago, Ind.—Bldg. housing a grocery damaged	50
Muskegon, Mich.—Muskegon Lumber & Fuel Co., city sewage station, hardware store and residence	125
Prescott, Ark.—Hesterly drug store, McRae & Tompkins law offices, Quality shop of Maude Powell, offices of Dr. J. B. Hesterly, beauty shop of Charles Rowe and McRae estate, damaged	50
Atlanta, Ga.—Atlantic Brewery plant damaged	80
Macon, Ga.—Warner Robins USO Club bldg. owned by FWA damaged	50
Chicago, Ill. — Woodworking factory of Roeser Co. in River Forest, destroyed	100
Kellogg, Ia.—Paint shop of Midwest Mfg. Co. destroyed	50
Jennings, La.—Business district damaged	50
Columbus, Ohio—Levy Mendal Tobacco Co. damaged	60
Charlotte, N. C.—Main cafeteria of U. S. Rubber Co. plant south of Charlotte destroyed	60
Oakland, Cal.—Labers Milling Co. plant on waterfront damaged	450
Peoria, Ill.—One-half square block of the ten acres of roofed pens, known as the calf and sheep dept. and part of administration bldg. at Union stockyards destroyed	50
Des Moines—Bldg. occupied by Dr. Pepper Bottling Co. and Fruit Seal Co. destroyed; adj. Grand Union Tea Co., Lowe Used Car Co. and Hanwood apts. damaged	80
Bethel, Me.—Woodworking mill of H. F. Thurston & Son destroyed	125
Milwaukee, Wis. — Falconizing, Inc., fur cleaning service damaged; also Safety Envelope Co.	50
Lake Delawan, Wis.—Several bldgs. and silos and all dairy equip. on farm of George W. Borg destroyed	225
Palmyra, Mich.—Three large barns on farm of Howard Driggs destroyed	80
Richmond, Ont.—Fiber mill and flax storage barn of Laurentian Flax Products Co. destroyed	75
Saskatoon, Sask.—School destroyed	60
Tampa, Fla.—Carpenter shop of McCloskey & Co.'s Shipyard destroyed	80



It has to work alone and like it

No and's, if's or but's about it, a Homelite Portable Generator, installed in a plane or a tank is in no position to receive nurse-maid attention. It's usually crammed into some hot, tight corner where it is practically impossible to service it.

Which means just one thing . . . a Homelite Generator with its built-in gasoline engine has to work and stand up under the toughest kind of usage . . . hours on end . . . without receiving any attention or service. To meet demands like this . . . born of war . . . Homelite engineers have developed a higher powered, lighter-weight and, above all, a more dependable gasoline-engine-driven generator . . . a compact, portable Homelite that will meet and pass the performance requirements of any peace-time job.

HOMELITE CORPORATION
PORT CHESTER, NEW YORK

FOR YOUR PEACE-TIME JOBS

The new Homelite Portable Generators that you will use after the war for operating brilliant floodlights or electric tools will work better in winter and summer. They will be more dependable even under the toughest operating conditions. They will work longer hours without attention or service . . . and will be more rugged and powerful than ever before.

Portable Pumps - Generators - Blowers

EFFICIENCY PLUS SAFETY AND COMFORT IN ACME GAS MASKS

This Acme FULL VISION All-Purpose Type FD Gas Mask is approved by the U. S. Bureau of Mines. It protects against Carbon Monoxide, Acid Gases, Organic Vapors, Toxic Smokes, Fumes, and Smoke Suffocation. Specify Acme Gas Masks—Write for descriptive literature and prices.

ACME PROTECTION EQUIPMENT COMPANY, INC.
Manufacturers
LIBERTY AVENUE Cable Address ACMEPROCO PITTSBURGH, PA. U.S.A.

A BADGE *to be proud of* NOW
more than ever BEFORE

Now—because of the Government's prohibition of the use of nickel, brass, copper, nickel plating, and chromium—we are making these badges and insignia in sterling silver, sterling silver gold plated, rolled gold on sterling silver and 14 karat gold.

Today—for just a little more, you get a sterling silver Braxmar Badge—without doubt the best badge you can buy anywhere.

The blue covered catalog is the latest published but write for our new price list, effective July 29, 1943. Only prices in the catalog on 14 karat gold items are still in effect. A special Fire Dept. circular is now in preparation. Watch for your copy.

C. G. Braxmar Co., 242 W. 55th St., N. Y.
JOHN O. VEIT, Pres.
BRAXMAR BADGES
Standard for over 60 years

East Prairie, Mo.—Storage house of Pecos Valley Alfalfa Mills, destroyed	50
Bucyrus, Ohio—Newberry Store destroyed; adj. Baumoel Store damaged	80
Sardinia, Ohio—Cottage Inn and Stivers restaurants, Lester Yochum grocery, Luther Yockey hardware store, Frank Tracy wallpaper store and dwelling destroyed	50
Outlook, Sask.—Three-story school destroyed	60
Decatur, Ind.—Storage plant of Central Soya Co., Inc. destroyed	50
Decatur, Ill.—Elevator of Hervey City Grain Corp. destroyed	170
Wilkinsburg, Pa.—Warehouse of Murdoch Storage & Transfer Co. destroyed	80
El Campo, Tex.—Bldg. occupied by Western Auto Supply Co. and Elco Club destroyed; adj. bldg. occupied by J. S. Davis clothing store destroyed	65
Wichita Falls, Tex.—Wichita Engineering Co. war plant damaged	425
Dalton, Ga.—Brooker Spready Co. destroyed; Crown Laundry damaged	70
East Winnipeg, Man.—Military supply depot damaged	300
Detroit, Mich.—Fred J. Robinson Lumber Co., Duncan McKenzie Awning Co. and Darin Armstrong, Inc., destroyed	125
Terre Haute, Ind.—Unit of Terre Haute Ordnance Depot almost destroyed	100
Tacoma, Wash.—Donald W. Lyle Plywood Co. destroyed	80
Farragut, Ida. — Twenty-seven barracks bldgs., U. S. Naval Training Center destroyed	80
Derry, N. H.—Four-story bldg. of Derby Fibre Co. and four homes destroyed; four others damaged	80
Cleveland, Ohio—Grandstand and club house of the Thistle Down race track destroyed	425
Beverly, Mass.—Tupper Hall, a dormitory and social center of Endicott Jr. College damaged	50
Randolph, Mass.—Trinity Episcopal Church destroyed	50
Spokane, Wash.—Purchase Furniture Exchange damaged	50
Wenatchee, Wash. — Columbia Hotel damaged	60
Aurora, Ill.—Barn in Burlington Railroad Stockyards destroyed	50
Bad Axe, Mich.—Bad Axe Theatre in Knights of Columbus bldg. destroyed	80
Portsmouth, Va.—One wing of Mayview Hospital destroyed; another wing damaged	50
Everett, Mass.—Elks' Home destroyed	50

Chief George C. Winter Dies

Chief George C. Winter, who has been a member of the Syracuse, New York, Fire Department for thirty-four years and Chief for two, died suddenly on October 21 as the result of a heart attack.

He became chief of the department on May 11, 1942, having worked up through the ranks from the old "chemical division" to which he was appointed on June 1, 1910. He became a lieutenant in 1918 and was made a captain in the department on August 8, 1921.

Appointed district chief in 1936, he became deputy chief in January 1942, and succeeded Chief Philip N. Eckel, as head of the department in May of the same year.

He has been succeeded by Deputy Chief Frank M. Savage, who has been a fire department member for thirty-nine years.

Chief Harry Guerin Retires

Chief Harry Guerin of the Kitchener, Ont., Fire Department has submitted his resignation to the Kitchener Council, after twenty-nine years as fire chief of that city. Chief Guerin was one of the graduates of the Hamilton, Ont., Fire Department, and is known not only for his work in his own city but to fire chiefs throughout Canada. He is a past president of the Dominion Association of Fire Chiefs.

REINFORCED PROTECTION for the fleet... secured with NATIONAL FOAM

"Official U. S. Navy Photograph"

A safe voyage for the Invasion Armada required many types of protection from enemies in the air, on the sea, and under the sea, as well as the dread enemy of all times, a "Fire at Sea." The latter danger is keenly recognized by the U. S. Navy, who has provided fire protection against hard-to-control oil and other hazardous fires with National Foam Fire Fighting Equipment.

National Foam has repeatedly proved itself by quickly extinguishing serious oil tanker and other dangerous fires at sea and are extensively used by the U. S. Navy to help protect the fleet.

For years, many oil refineries and industrial plants have been protected by National Foam Fire Fighting Equipment. Our engineers will gladly consult with you and recommend the type of equipment which will most effectively meet your needs.

IN FIRE DEPARTMENT SERVICE

National Foam System has equipment especially designed for the use of Foam by Fire Departments. Complete engineering service available.

BACK THE ATTACK—*BUY WAR BONDS*

NATIONAL FOAM SYSTEM, INC.

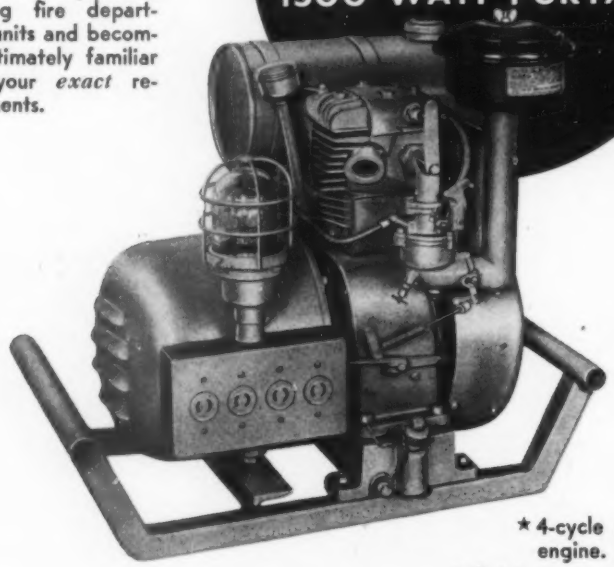
Specializing in Foam Fire Protection

Packard Building, Philadelphia 2, Pa.

It will help you if you will mention FIRE ENGINEERING *when writing advertisers*

This new 1500-watt U. S. Portable meets your own specifications of what a fire department portable should be—because it is the result of our many years of experience building fire department units and becoming intimately familiar with your *exact* requirements.

New
FIRE DEPT.
1500 WATT PORTABLE



★ 4-cycle air-cooled engine. 3.2 H.P.
★ Quick starting.
★ No fussing around mixing oil and gasoline.
★ Positive spash system lubrication.
★ Automatic voltage regulation under all loads. No adjusting necessary.
★ Equipped with carriers for easy portability.
★ Designed for *dependable* operation—a vital requirement for fire department service.
★ Larger and smaller sizes available.

Write for further information

UNITED STATES MOTORS CORPORATION

430 Nebraska Street **Oshkosh, Wis.**

ARMY (E) NAVY

Reeves
Reg. U. S. Pat. Office

FLEXIBLE STRETCHERS

No. 101

Every casualty, no matter how slight or how serious, can be made worse by rough, improper handling. Reeves Stretchers can be used in the most inaccessible places.

If your dealer cannot supply you write to:

A. SMITH & SON, Inc.
1237-39 RIDGE AVE.
$14.50 PHILADELPHIA, PA.

Classified Advertisements

Place your idle fire fighting equipment in active service by bringing it to the attention of the nation's fire service through classified advertisements in FIRE ENGINEERING.

There is immediate demand for this equipment! Rates are low—only $5 per inch insertion (10% discount allowed for three or more consecutive insertions). FIRE ENGINEERING, 24 West 40th St., New York 18, N. Y.

AGENTS WANTED

To sell high grade line of fire protection equipment and fire department supplies. Good proposition. Write—Schwartz Bros., Inc., 731-733 Filbert St., Philadelphia, 6, Pa.

"Established over 37 years."

WANTED

Fire Equipment Supply Companies, to sell Morning Pride Protected Rubber Firecoats, with Wing Sleeves, Chest Protector, Face Protecting Collar, Wool Wristlets, Double Shoulders. No Dirt Pockets. Also Firepants and Mitts. Write Morning Pride Mfg. Co., 1986 Home Ave., Dayton 7, Ohio.

CHIMNEY POWDER

No need to send men on the roof for chimney fires. Has-Mor Soot Destroyer not only puts the fire out, it continues to work until it cleans the chimney, making it unnecessary to go back to another chimney fire. Put up in handy packages. Agents wanted. Harry S. Morgan, 52 Broad St., Johnson City, N. Y.

AGENTS WANTED

Sell popular $3 Dry Chemical Fire Extinguisher. Every household and car owner a prospect. His first hour's work paid Fireman Martin $21 profit. You can also wholesale to stores. Product established 10 years and well recommended. Fire-Killer Mfg. Co., 107-111 N. Franklin St., Syracuse 4, N. Y.

FOR SALE — SIRENS

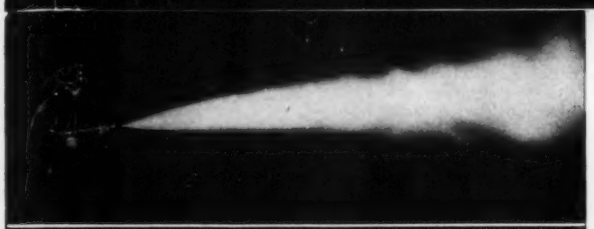
7—Foster Engineering Company Type 45 Steam Sirens.
19—3 HP, 220 Volt, Sparton Electric Sirens.
8—½ HP, 110 Volt, Sparks-Worthington, Model 100 Electric Sirens.
B. P. Dysart, Purch. Agent, City of Dallas, Tex.

WANTED

Metal Bell in good condition suitable for church use. Post Office Box 1, Dublin, Pennsylvania.

FOR SALE

Guaranteed 500 pounds working pressure. New hi-pressure booster hose with special expansion ring couplings, guaranteed to stay on. 50 foot lengths only. $45.00 per length. Ideal for all types of fog nozzles, using present pumpers. Doray Fire Equipment Co., 1924 Valley Drive, Syracuse 7, N. Y.

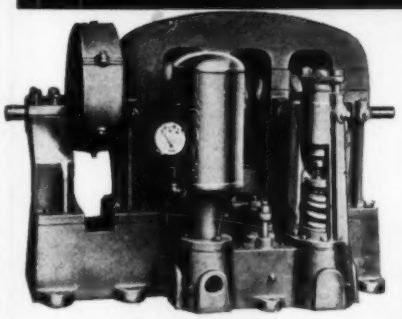


Make Sure Of Perfect Atomization Complete Control

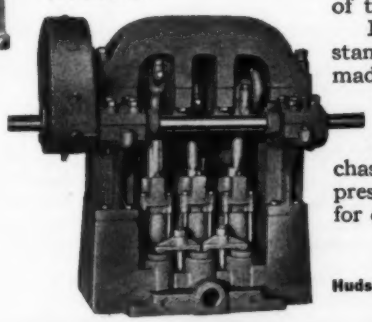
● An ever increasing number are recognizing the Fog Fire Fighter as a necessary and valuable auxiliary equipment. Sooner or later you are going to have one. Specify a Hardie pump and a Hardie Fog Gun in the Fog Fire Fighter you buy and be assured of a full measure of the benefits of this amazing new method of fire control.

The Hardie pump gives you 800 P. S. I. at the nozzle easily, at slow operating speed together with ample volume—35 to 60 gallons per minute. The Hardie Fog Gun delivers a completely atomized, fine steam-like fog which can be changed instantly into an intermediate spray combining fog with a fine driving stream, or to a solid stream of terrific force to drive fire from any selected point. Ease of transition from one type of application to another is provided by single-trigger control of gun, operated by the mere pressure of the fingers.

Hardie Fog Fire Pumps and Guns are standard equipment in Fog Fire Fighters made by leading manufacturers of complete Fog Fire Trucks. Existing equipment can be readily converted into a fog fire unit by mounting a Hardie pump on the old chassis. Consult the manufacturer of your present unit for such conversion data. Write for complete specification data.



● The Hardie is a big, strong vertical crankshaft-driven pump built for sustained high pressure under all conditions of use. At left, the Hardie Imperial LCXA delivering 60 gallons per minute at 800 P. S. I. Below the Hardie Imperial XCXX 35 gallons per minute at 800 P. S. I.



THE HARDIE MFG. COMPANY

Hudson, Mich. Los Angeles, Calif. Portland, Ore.

Specify

★H★A★R★D★I★E

High Pressure **PUMPS AND FOG GUNS**

for Fog Fire Fighters

Kindly mention FIRE ENGINEERING *when writing advertisers*

DEWEY HOSE EXPANDER

Improved Dewey Hose Expander, size 2½ inch only. A practical precision built tool that will last a lifetime.

Nothing is too good for the fire service—only the BEST will do. Fire departments have been relying on us for 50 years. We make and sell nothing but the finest fire tools money can buy.

REG. U.S. PAT. OFF.

POWHATAN
BRASS & IRON WORKS

RANSON ★ WEST VIRGINIA

Phones 93 & 94 Charles-Town, West Virginia

Established 1892

Fire Service Presents Case for Own Radio

(*Continued from page* 804)

and property worth $4,000,000,000 destroyed by fire in the next decade. He outlined the handicaps under which the fire service is laboring today, and the problems that it will face in the post-war period. He pointed to the lessons to be drawn from the war—particularly stressing the need of better communications on the fire ground, and he emphasized the part the fire service must play in disasters other than conflagrations such as hurricanes, floods and earthquakes. Chief Pope registered the economic savings to be derived from modern radio two-way communications but pointed out that only a very few fire departments now were able to realize such savings because of their present limited use of radio. He assured the Commission of the Association's desire to cooperate with it and offered to appoint a committee to work with the Commission, to take up the slack between it and the fire service on matters pertaining to radio communications. At the conclusion of his presentation the attorney for the Commission requested Chief Pope to appoint such a committee. It is expected that the present Committee on Communications of the International Association of Fire Chiefs, Chief Roi Woolley, Chairman, will function in this capacity, with possibly one or two additional technical members.

Another request for frequencies for the fire service was presented by William E. Whiting, Radio Engineer from Kern County, Calif., who came from the Coast with Howard Bowhay the State's conservation expert.

Plea for Independent Frequencies Made by Lauber

Speaking as the representative of the National Board of Fire Underwriters, Calvin Lauber, former fire marshal of the District of Columbia, and now a member of the National Board, endorsed the recommendations of Committee Two.

Although connected with the Metropolitan Police as radio supervisor, Donald J. McFarlane, submitted a strong plea for independent frequencies for the fire service. The cooperation between police and fire services is demonstrated by the action of the Board of Directors of the New England Association of Fire Chiefs which voted in October to contribute the sum of $100 to Mr McFarlane's group to aid in achieving wider use of radio in the emergency services.

Representative of the National Fire Protection Association were unable to be present, although that Association was included in the group of organizations invited to speak for the fire service.

The hearings were concluded after the engineers and legal staff of the Commission cross-examined Mr. Friede and others. Although it is too early to predict the final action of the Commission—it still has many other panels to hear—it is confidently expected that the fire and police services will have most, if not all, of their requests granted. Certainly the Commission has appeared most sympathetic in its deliberations.

ROSS
RELIEF VALVES

1" to 2½" female threads

MODERN PUMPERS

demand these rugged, modern relief valves. Their simplicity and responsive dependability make them a must. Made in sizes from 1 inch to 2½ inches with capacities up to 1600 g.p.m. and pressures up to 750 lbs. Write for descriptive literature describing the complete line of

TRAILER PUMPERS

Trailer pumpers require valves made especially for this type of work, such a valve is the ROSS Trailer Pump Relief Valve. Made in sizes from 1 inch to 2½ inches with pressure adjustments from 10 lbs. to 750 lbs. and capacities from 0 to 500 g.p.m. at 120 lbs. pressure.

ROSS VALVE MFG. CO
INCORPORATED
P.O. BOX 595, TROY, N.Y.

NOW AVAILABLE

MIDWESTERN *Fireman's*

Rubber or Canvas—COMBINATION SUIT

Special combination suit with Bunker Pants is Midwestern's Outfit No. 101. Detachable wool linings. Flexible elastic inner sleeve for wrist. Keeps out water, cold and sparks. Equipped with Midwestern Safety Snap, a new exclusive feature. Can be easily and quickly fastened or unfastened—nothing can catch on it. Will not freeze or jam as easily as old type snap. Midwestern garments are favored by the larger municipal departments throughout the country. Write for literature and prices.

THE COAT:

- Adjustable collar strap
- Reinforced collar band for lining
- Lining attached with quick snap buttons
- Corduroy lined collar
- Reinforced, double stitched seams
- Vertical seams in sleeve shoulders
- Inside of fabric, heavily napped cloth
- Two outside pockets
- Wool detachable lining
- 6-inch storm flap

REGULAR FIREMAN'S BOOTS NOW AVAILABLE

Fireman's boots ¾ length, reinforced instep, felt linings. Do not confuse these boots with reclaimed boots which have been offered firemen for past 2 years. These are regular fireman's boots made of the new synthetic rubber. Write.

See your Midwestern Mfg. Co. representative for catalog and prices, or write the factory.

THE PANTS:

- Lining held by snap buttons
- Rubberized fabric belt in lining
- Eight suspender buttons
- Safety snap on belt
- Two side and one hip pocket
- Reinforced adjustable belt
- Special Vanitex fabrics
- Wide protecting flap
- Reinforced by rivets

MIDWESTERN MFG. CO., MACKINAW, ILLINOIS

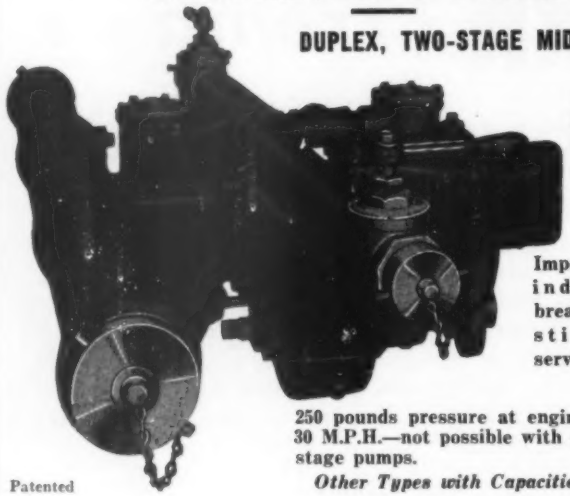
Barton Front Mounted

AMERICAN-MARSH PUMPS

Barton-American Midship

FIRE APPARATUS CENTRIFUGAL PUMPS

DUPLEX, TWO-STAGE MIDSHIP MOUNTED



High Pressure performance entirely unaffected when unit used to pump gritty water.

•

Impellers mounted on individual shafts—breakdown of one pump still leaves one for service.

•

250 pounds pressure at engine speed equal to 30 M.P.H.—not possible with conventional two-stage pumps.

Patented

Other Types with Capacities to 750 G.P.M.

•

WRITE FOR BULLETIN 8731F

•

AMERICAN-MARSH PUMPS, INC., Battle Creek, Michigan

Pumps — and pumps only — since 1873

This emblem, which identifies one of the Nation's most complete lines of department supplies, is known and respected wherever fire fighting equipment is used. It is the mark of thoroughly sound design and extremely high quality.

ELKHART BRASS MANUFACTURING CO. Inc.
Elkhart, Indiana

Lieutenant R. W. Granger Dies

Navy Lieutenant Raymond W. Granger, former Tulsa, Okla., fire chief and fire marshal, passed away in his home city early in July as the result of a gall bladder operation from which he failed to rally.

Chief Granger left his post as fire marshal early in 1942 to enlist. During his service at the Mare Island Navy Yard, San Francisco, in November of 1942, an explosion occurred. The officer was near death for months in a Navy hospital. His right arm was shattered, disabling him permanently. However, he recovered from dangerous burns about his eyes.

He joined the Tulsa fire department in 1921. With the exception of one year he spent with the Pasadena fire department in 1924, he had been in the service continuously until 1942, at which time he retired.

The Chief started as a fourth class fireman and steadily worked up to a first class ranking, then as secretary to former Fire Chief R. E. Pitts. From his post as drillmaster in 1933, he became chief.

In 1940 he assumed the post of fire marshal and was there until he enlisted in the Navy.

He was a member of the International Association of Fire Chiefs and served also as a vice president of the Eleventh District of the International Association of Fire Fighters.

Chief Burr Hamilton Dies

Burr Hamilton, Chief of the Marion, Ind., Fire Department, died on October 24 at the Marion General Hospital, where he had been a patient two months.

He had been a member of the department for forty-five years, assistant chief twenty years and chief for eighteen years.

A native of Marion, Chief Hamilton served as an extra member of the fire department for several years prior to his appointment in 1900. His early training was under his father, the late Thomas Hamilton.

He served as president of the Indiana Firemen's Association two terms and also served on its legislative committee.

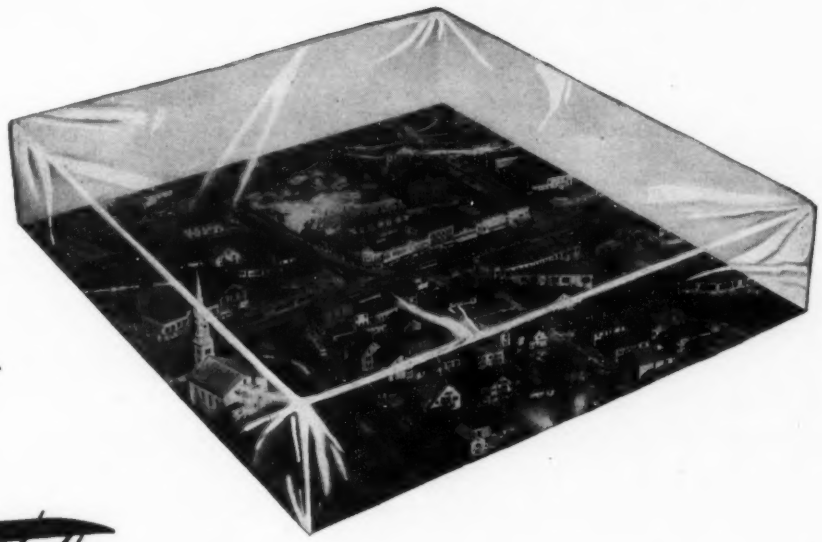
Surviving are his widow and two children, Lieutenant Thomas Hamilton, U. S. Navy, and Mrs. Harold Friermood.

W. B. CARLETON

F. G. Anderson, Fire Alarm Supt., Retires

Frederick G. Anderson, Supt. of the fire alarm signal system of the Bridgeport, Conn., Fire Department, was retired by the Board of Fire Commissioners on October 3 after 28 years service. Supt. Anderson joined the Bridgeport Fire Department on March 6, 1916. One year later, on September 1, 1917, he was advanced to the rank of Asst. Supt. On December 1, 1928, upon the death of R. Arthur Brown, he was promoted to Superintendent of Fire Alarms and given the rank of an assistant chief. Supt. Anderson was a member of the Connecticut Municipal Signal Association. Pending competitive Civil Service examinations, Fire Captain Joseph J. Brady, Asst. Supt. of Fire Alarms, will be in charge of that office.

THOMAS F. MAGNER



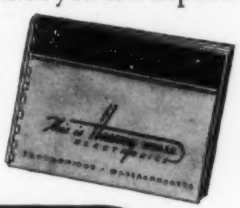
This is NOT *your community*

No community is sealed off against criminals — or fire — or against harm and wrongdoing to its citizens. But modern science provides many methods to overcome and control these factors. One of these is communications.

Communications in post-war will mark a new era in public safety. Communication systems between police headquarters and patrol cars are today potent weapons against crime — and are constantly being improved. Tomorrow, communications will link all protective services and public utilities . . . operating swiftly and efficiently to cut down property loss and save lives.

These are but two examples of how your community will be better protected in the future. To serve the public safety Harvey-Wells manufactures precision-built communications equipment on which you can depend for unfailing service.

Know the company that wants your business! Our CASE BOOK tells the story of Harvey-Wells and its place in Electronics. Send for it today.



Harvey-WELLS

ELECTRONICS, INC.

SOUTHBRIDGE · MASSACHUSETTS

"HAHN" FIRE APPARATUS
SINCE 1907

FINEST IN THE WORLD ★ STREAM-LINED ★ BALANCED CHASSIS ★ AMPLY POWERED ★ VERY EFFICIENT PUMPS WITH PLENTY IN RESERVE

HAHN MOTORS, Inc.
HAMBURG, PA.

An absolutely dependable, tried and proven siren for communities of all sizes. Loud, clear, simple to instal and no maintenance to bother with. Embodying the "know how" of the oldest and largest makers of siren signals in the fire field. Write for descriptive literature and list of towns using the model "M".

ALSO
manufacturers of a complete line of apparatus sirens.
Write for literature.

STERLING SIREN FIRE ALARM CO., Inc.
55 Allen Street Rochester, New York

War Fare

By Roi B. Woolley

There'll Be More of This!

Pvt. Sidney Rosenberg of New Rochelle (N. Y.) is at Fort Slocum Hospital recuperating from second degree burns on face and hands sustained when a magnesium flare he had brought home with him from Fort Bragg exploded. The youth, who had emptied the powder, was taking the bomb apart when the propelling charge went off.

There oughta be a law!

* * *

Real "War Dog"

Flying robot bombs launched from planes continue to cause casualties in Britain. A small hotel crowded with 35 guests was hit and demolished, killing or injuring most of the occupants.

When rescuers were delayed in locating and reaching casualties a specially trained British war dog was put to work.

The dog worked his way into the wreckage sniffed about for some moments, then began to scratch. "This is it!" shouted a rescue man, and digging began again. A boy, 10, was dug out uninjured but suffering from shock.

* * *

Plane Crash Costs 24 Lives

Officials of CAA and Transcontinental & Western Airlines are investigating the crash of a TWA Douglas DC-3 twin-engined transport, which, according to reports, exploded in mid air en route from San Francisco to Burbank (Calif.) in a rainstorm, killing 24 persons, including three members of the crew. Most of the dead were members of the armed forces.

* * *

From Overseas

When a "fly-bomb" burst in the vicinity of a London suburban fire station the wife of a fire officer and three firemen were injured.

It's not sufficiently known that fires not resulting from hostile attack are responsible for losses in industry comparable with those caused by the enemy.

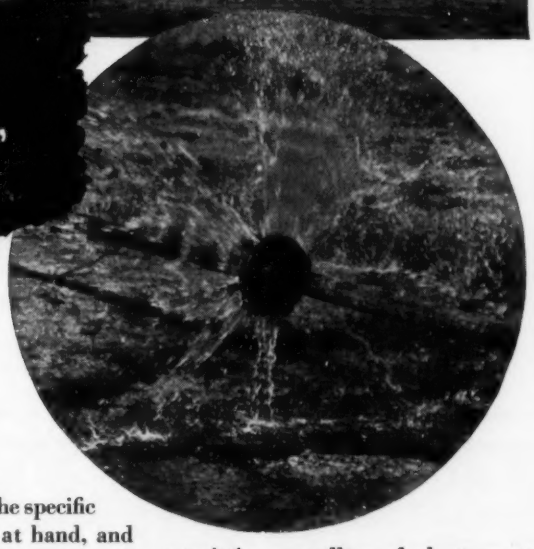
D.D. of Regional Organization of the Ministry of Aircraft Production.

American and RAF firefighters have been commended for gallantry and devotion to duty when a "lame" Flying Fortress crashed on a dump of 500 and 1,000 lb. bombs. Gasoline from ruptured fuel tanks made the dump a sea of flame. The "crash party" quickly on the scene, fought the fire, removed the bombs to places of safety, and extricated wounded members of the bomber's crew all of whom except three, survived.

A fireboat of the 32nd Fire Force, based on a South Coast port (England) rescued a U. S. airman from the channel into which he had fallen after bailing out of his plane.

Great Britain no less than the United States is concerned with the disposal of its "surplus" auxiliary fire fighting equipment. We note in "Fire" of August, 1944 the following: . . . "the Home Office can keep the junk appli-

Not Very Big . . . but PLENTY "MEAN"



You can't always judge the *toughness* of a fire by its size. Some relatively small fires fight back so viciously . . . hang on so stubbornly . . . that they are harder to extinguish than many big blazes.

Extinguished in 20 Seconds

Here's a demonstration fire in which no punches are barred. Not very big. Just a broken flange on a pipe line, spraying gasoline into the air . . . 10 gallons a minute, feeding a fast-spreading flaming pool. *No sheltering walls and no large surfaces on the flange to retain or make easier* the job of the extinguishing medium. Specifications for a fire that's *very* tough to handle.

First picture above shows fire after gasoline had been allowed to spray for a full minute. Yet, Cardox CO_2, discharged at the rate of 700 pounds per minute from a single Cardox nozzle (as shown in middle picture) extinguished this fire in 20 seconds.

Protecting *hard-to-handle* hazards is the job of Cardox Fire Extinguishing Systems engineered for the specific hazards and conditions at hand, and of Cardox Fire Trucks that put swift wheels under *tons* of carbon dioxide. Thanks to their distinctive ability to provide *mass* application of Cardox CO_2, Cardox Systems and Fire Trucks have taken over a roster of the toughest fire assignments in scores of war industries... and licked them to a standstill.

Enhanced CO_2 Performance

In Cardox Systems and Fire Trucks fast-acting, non-damaging carbon dioxide is given enhanced extinguishing performance because, as controlled and applied, Cardox CO_2: (1) Has uniform extinguishing characteristics regardless of plant or atmospheric temperatures; (2) Is available in ample quantity for application at high rate; (3) Provides high CO_2 "snow" yield for increased cooling effect; (4) Achieves effective projection through relatively great distances.

Write on company letterhead for Bulletin No. **19114,** containing data on Cardox Engineered Systems and Mobile Equipment applicable to protecting oil industry fire hazards.

CARDOX CORPORATION
BELL BUILDING • CHICAGO 1, ILLINOIS
District Offices in New York • Boston • Washington
Detroit • Cleveland • Atlanta • Pittsburgh
San Francisco • Los Angeles • Seattle

BUY WAR BONDS

CARDOX
CO_2 FIRE EXTINGUISHING SYSTEMS

QUESTION NO. 1—

Question Number One by Fire Chiefs purchasing new equipment, to apparatus salesmen:

"Is your apparatus equipped with a Hale Pump?"

Hale Fire Pumps are sold only to manufacturers of quality fire apparatus.

Known for consistent, reliable performance . . . built in all standard capacities.

Write today for Catalog and Folders with up-to-date information on Hale Fire Pumps.

HALE
FIRE PUMP COMPANY
Conshohocken, Pa.

CRACKERJACK FIRE HOSE

DEPENDABLE FIRE HOSE SINCE 1907

Above all, fire hose must possess durability and strength. Over the years, Crackerjack Fire Hose has consistently met these tests of quality.

Specify Crackerjack, *the fire hose you can always depend on!*

The AMERICAN RUBBER Mfg. Co.
Park Avenue and Watts Street • Oakland, Calif.

ances or sell them to farmers for agricultural purposes. . . . Mr. Morrison (Home Office) must never forget that the Home Office appliances (emergency war apparatus) will be of little value in peace-time . . . the finest equipment is still the old peacetime red appliances."

Great Britain envisages in its post-war fire defense a complete up-to-date fire prevention and fire investigation laboratory attached to the headquarters of each "Fire Force," national or municipal.

Students of foreign fire fighting will watch with interest the controversy as to whether the Government shall retain control of the fire service or local authorities regain it after the war.

* * *

Dominion Notes

Post War Fire Plans

Fire Marshal Wm. Scott's office has been tabulating returns from fire chiefs on the question of post-war improvements. Estimated expenditures of 95 chiefs reporting is $1,500,000 for better fire protection divided as follows: 33 brigades plan new fire halls or enlarging present halls; 32 plan water-works and fire hydrant programs; 7 plan to spend on short-wave radios, 28 will extend their fire alarm systems and 56 plan to purchase new fire apparatus.

The Marshal hints that 95 returns out of 381 municipal chiefs all told indicates that 286 are neglecting their chances to better their fire brigades after the war.

The Provincial Firemen's Training School was held October 25-28 at the University of Toronto. Besides the lectures a feature was the first demonstration in Canada of the new high-pressure fog fire pumper, producing fog at 600 lbs. nozzle pressure.

The Dominion went in heavily for Fire Prevention Week, October 8-14.

* * *

Off the Ticker

VOLUNTEER CIVILIAN DEFENSE WORKERS WOULD BE ALLOWED TO RETAIN THEIR EQUIPMENT FOLLOWING THE END OF THE WAR UNDER A BILL INTRODUCED SEPTEMBER 21 BY REPRESENTATIVE BERNARD W. KEARNEY IN THE NATION'S CAPITOL. . . . Up to September 26, for ten nights in a row, flying bombs came over the east coast of England. It is believed they were launched from enemy aircraft. . . . It is now known that two German land mines destroyed 350 houses in the London area and that a chemical, a red powder, dropped in West England in September, 1941 caused skin inflammation. . . .

* * *

Flying Bomb Statistics

It has been disclosed that 1,027,995 London houses have been damaged by flying bombs. Here is the list of bomb damage as given to the House of Commons:

Houses damaged beyond repair, 25,511
Houses seriously damaged, and not habitable, 52,277
Houses damaged but habitable, 77,030
Houses slightly damaged, 873,177
Total, 1,027,995.

"MASTER-LIGHTS"

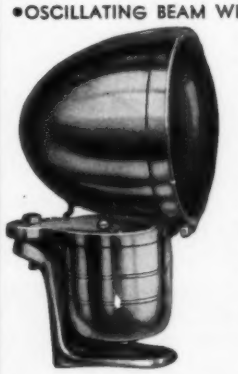
•FOR THE CHIEF—TYPE WS HIGH-POWER RECHARGEABLE LIGHT: Mile Searchlight, 250,000 c.p. emergency beam for 8 hours, or 20 hr. worklight per battery charge.

6" diameter true parabolic reflector. Special double filament bulb; 3-way switch. Weight, 11 lbs.

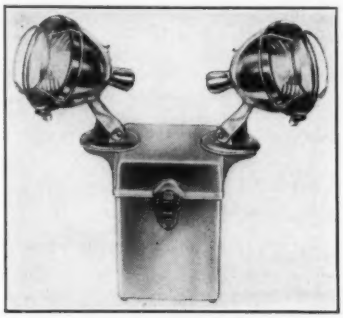
•SUPER-6—FOR THE OFFICERS—TYPE SUPER-6 HIGH POWER RECHARGEABLE LIGHT: Equal in power, burning hours, etc., to the WS but somewhat lighter in construction and does not have

the patented handle that keeps the weight always directly under the fingers. Height, 13 inches. Weight, 10 pounds.

•OSCILLATING BEAM WIG-WAG REDHEAD—TYPE #06, 6" diameter, and TYPE #08, 8": Put one on every car and truck. CLEARS YOUR SIDE OF STREET, TOO — for safer, faster, quieter runs.



PREVENT PANIC AND DEATH SAVE LIVES

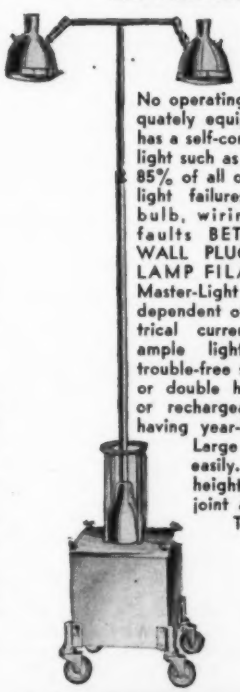


TYPE DUL MASTER*LIGHT (Automatic)

Road Houses, Factory Rooms, Loading Docks, Theatres, Lodges, Auditoriums, Restaurants.

Where continuous light must be maintained. On failure of usual lighting facilities Type DUL lights instantly illuminating 100' diameter circle with each lamp head. With special year-long shelf-life rechargeable battery and manual or automatic control.

EMERGENCY LIGHTS FOR HOSPITALS, CONTROL ROOMS AND KEY POSITIONS



HOSPITAL MASTER LIGHTS: No operating room is adequately equipped unless it has a self-contained battery light such as Master-Lights. 85% of all operating room light failures result from bulb, wiring or switch faults BETWEEN THE WALL PLUG AND THE LAMP FILAMENT. The Master-Light is entirely independent of outside electrical current, yet gives ample light and long, trouble-free service. Single or double head, with dry or rechargeable battery having year-long shelf-life. Large casters roll easily. Telescopic height and universal joint adjustments. Type DHL

MASTER-LIGHT MAKERS

•TYPE F5: Uses dry cell Hotshot type of battery. Otherwise like the Super-6.

•FOR THE MEN—TYPE G-23: Watchmen and Firemen's Light. Rechargeable battery. Saves many dollars in dry batteries annually as watchmen's light. Two-filament

bulb, one for all night service and other for firemen, police, and watchmen's emergency uses. Weighs only 76 oz. Third-mile-range. With or without carrying strap.

•TYPE T&T 2-WAY with one red and one white light. Beam and red reflectors. Uses two No. 6 or telephone type dry cells. 1/5th mile range. Focusing knob. Sturdy rustproof steel case.

CARPENTER MFG. CO., CAMBRIDGE 39, MASS.

JANESVILLE QUALITY TURN OUT CLOTHING

Our turnout suits are giving excellent satisfaction in most of the large fire departments throughout the U. S. and

THERE MUST BE A REASON WHY SO MANY FIREMEN INSIST ON JANESVILLE QUALITY

NOW AVAILABLE!

We can now supply old type ¾ Felt-lined Firemen's Boots.

JANESVILLE APPAREL CO.

JANESVILLE, WIS.

CIRCUL-AIR

FIRE HOSE DRYER

- Is easier to use
- Saves drying time
- Reduces hose stretch
- Prevents mildew and rot
- Improves building design
- Air-conditions as it dries

THE CIRCUL-AIR CORPORATION

6339 East Palmer Avenue

DETROIT 11, MICHIGAN

Coast Guard Develops Monitor for Under-Dock Fires

(*Continued from page* 806)

of the tiller lines. If it is desired to maneuver the monitor to starboard, the starboard line with the green floats is pulled. Conversely, to maneuver to port, the port line with red floats is pulled. Caution must be exercised to be sure that the tiller lines are taut at all times; for if any slack is allowed to develop, control of the monitor will be lost at once, and may never be regained. However, this need never occut if the operator is alert and constantly on guard.

Fifty Foot Fog Nozzle Spray

The fog nozzle provided for the monitor is capable of throwing a spray forty to fifty feet in the air. Two fog heads are furnished with each monitor. One gives a finer spray with more force, but uses less water and therefore leaves more water for propulsion. For operation in a current where more propulsion power is needed, the finer spray should be used. A pressure of 150 pounds at the pumping unit will provide approximately 125 pounds pressure at the monitor. Under this pressure, the nozzle will distribute almost a complete fog. By jerking back and forth on the tiller lines, the monitor can be made to rock from one side to the other, and play water over a much larger area. To manipulate the tiller lines properly requires considerable experience. Improper operation might cause the monitor to capsize or the lines to be fouled.

The Coast Guard instructs its fire boat crews to conduct frequent drills with floating monitors in order to become entirely familiar with their operation, and in order to establish a routine procedure for handling the device in the event of fire. According to information received by the editors, the tests run in various Coast Guard Districts indicate that the monitors should prove a useful piece of fire-fighting equipment for fires beneath piers, docks and wharves.

Ex-Chief J. C. Loucks Dies

John C. Loucks, aged 77 years, former Fire Chief of Indianapolis, Ind., died on September 24 at his home after a short illness.

He was widely known over Indiana. He had been president of the Police and Firemen's Insurance Association, founded in 1913, which provides health and accident protection for 30,000 firemen in thirty-six states, and was re-elected for another four-year term at the Association's national convention held two weeks before his death. Chief Loucks literally had grown up with the association, as it first came into being with a membership of 300 firemen from Indianapolis and surrounding cities.

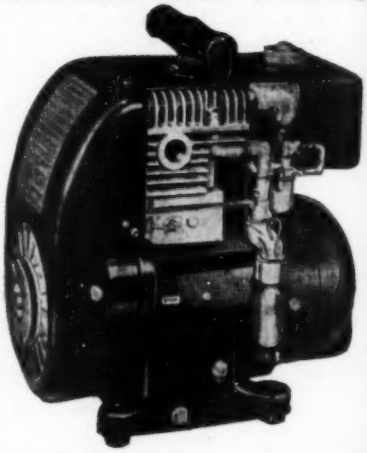
A life resident of Indianapolis, Chief Loucks was born July 3, 1867. He attended public schools there and became a carpenter before joining the fire department, September 16, 1889. He was promoted to captain in 1896, third assistant chief in 1906, assistant chief in 1912 and became chief in 1918, serving until his retirement January 2, 1922.

He is survived by his widow, Mrs. Daisy E. Loucks, and a daughter, Miss Gladys Loucks. W. B. CARLETON

PORTABLE

FLOODLIGHTING

GENERATING PLANT



This 1500 watt portable generator, with 25% reserve, especially designed for fire department service. Lightweight, rugged and compact. Air-cooled 4-cycle engine 2¾" bore x 2¾" stroke. Quick starting. Fully guaranteed, thoroughly dependable.

Also from 600 to 2500 Watts in A.C. and D.C.

Write for Catalog

SECURITY FIRE EQUIPMENT CO.

1550 Princeton Ave. Trenton, N. J.

EDDY

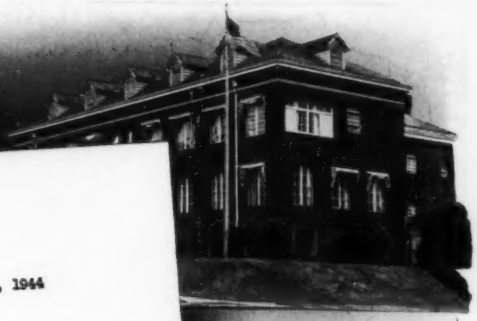
Fire Hydrants

Are given preference by so many fire protection and water works men because they know that more than half a century of experience goes into their manufacture and they embody valuable and exclusive features.

Write for the Facts

EDDY VALVE CO.

Waterford, N. Y.



KING COUNTY
JUVENILE DETENTION HOME
SEATTLE, WASH.

WILLIAM G. LONG
JUDGE OF THE SUPERIOR COURT
SEATTLE 4

April 3, 1944

American District Telegraph Company
1337 Fourth Avenue
Seattle, 1, Washington

Gentlemen:

With reference to your report on the fire occurring in the King County Juvenile Detention Home on March 3, I wish to express my heartfelt appreciation for the service which your Aero Automatic Fire Alarm system rendered.

In this detention home there is an average population of between twenty-five to thirty-five boys and girls ranging in age from infants to eighteen years.

Doors, windows and fire escapes are necessarily always locked in order to prevent escapes. This, of course, creates a potentially hazardous situation in case of fire and has been a constant source of worry and concern to me, because I am officially responsible for the safety of every child being detained.

The possibilities of panic in a fire have continually haunted me until we had an actual demonstration as to what your equipment actually does in time of emergency.

The fire was incendiary, having been planned and executed by some boys in detention who carefully worked out the details of a general escape of all inmates in the confusion which they thought would follow the fire.

In this plan they were frustrated for the reason that the automatic detector spotted the fire in the isolated clothes closet and in a few moments the fire department and police officers were on hand directing their attention to the specific spot of origin. It was all over in a few moments, no particular damage was caused, there was no panic, no confusion and no casualties.

As a matter of fact, it all happened so quickly and was so effectively handled that the staff workers in the other part of the building were not even disturbed and really didn't know what was happening until it was all over.

In my opinion, the entire cost of maintaining this alarm system, both past and future, has been more than paid for in this single incident.

I extend to your company, and to your representative who negotiated the installation, my heartfelt gratitude.

Yours respectfully,

W. G. Long

WGL:BT

THANK YOU, JUDGE LONG...

We are sure that everyone who is directly or indirectly responsible for the safety of life and property will welcome your opinion of the protection A. D. T. Aero Automatic Fire Detecting and Alarm Service affords...every moment of the day and night. Booklet and complete information on this widely endorsed fire detecting system will be sent without obligation. Write us...TODAY.

A. D. T. ELECTRIC PROTECTION SERVICES

Controlled Companies of **AMERICAN DISTRICT TELEGRAPH CO.** *155 Sixth Avenue, New York*

CENTRAL STATION OFFICES IN ALL PRINCIPAL CITIES OF THE UNITED STATES

A·D·T

Electric Protection Services

AGAINST FIRE · BURGLARY · HOLDUP

A NATION-WIDE ORGANIZATION

HOSE BRASS GOODS
WB LINE
THE WOOSTER BRASS Co.
WOOSTER, OHIO

BACK THE ATTACK ON FIRE WITH FIRE DEPARTMENT SUPPLIES OF DISTINCTION

★

THE WOOSTER BRASS CO.
WOOSTER, OHIO

★

When you specify products bearing the TRUMPET trade mark, you can SAVE and BANK on SAFETY.

PREVENT SMALL FIRES from becoming LARGE FIRES

Fyr-Fyter equipment has proven its value in preventing small fires from becoming disastrous through the loss of life and property. Recent catastrophic fires with terrific loss of life emphasize the urgent need of fire protection. A Fyr-Fyter Instant will usually check most any fire if used immediately.

HELP SAVE LIVES AND PROPERTY

Get Fyr-Fyters for safety's sake. We advise and serve war production plants, public institutions, etc., immediately. Write us today regarding Fyr-Fyter equipment for your own protection.

THE FYR-FYTER COMPANY
Dept. 101, Dayton 1, Ohio

Buy WAR BONDS ARMY NAVY

Fyr-Fyter

Cleveland Suffers Worst Fire Catastrophe in History

(*Continued from page 799*)

held in by doors that opened inward instead of outward.

One hundred and twenty-five persons died in the Cleveland Clinic fire of May 15, 1929. Poisonous nitrous oxide fumes from burning X-ray films killed many more than the actual fire.

On June 7, 1932, 13 residents of the Ellington Apartments on E. 9th street died in an arson-set blaze there. Two disasters at Cleveland's intake crib in Lake Erie claimed a total of 30 lives, the first on August 14, 1901 and the second on July 26, 1916.

September Fire Losses

Estimated fire losses in the United States in September were $31,448,000, an increase of $830,000, or three per cent over August, and $4,960,000, or nineteen per cent higher than September, 1943, it was announced by W. E. Mallalieu, General Manager of the National Board of Fire Underwriters.

This is the highest September loss reported since September, 1931, when the figure was $33,202,986.

The Board's estimates are based on incurred losses reported by member companies, plus an allowance for uninsured and unreported losses.

Losses in the twelve months ending with September 30, are estimated at $417,848,000 as compared with $354,445,000 for the year ending September, 1943.

Three Children Killed in Powder Blast

Three children were fatally burned and three other persons were hospitalized following the explosion of a 25-pound can of blasting powder at the home of Robert Ritchie in Fair Haven, Vt., on October 22. A three-story brick tenement building and a two-family house were destroyed by flames. The dead are Constance Ritchie 3, and her two brothers, Robert 2, and Gordon 1.

The injured were Mrs. Robert Ritchie, mother of the children whose husband is in the United States Army; Elizabeth Amery 10, and Francis Ritchie, uncle of the dead children. The blaze, most spectacular since the Liberty Street business section fire in 1918, also destroyed the Schultz Garage and threatened the Farm Service grist mill and feed store owned by the General Mills Company.

Sheriff Geno N. Franzoni of Rutland, who was called to Fair Haven to make an investigation of the tragedy, said Francis Ritchie told him that he took a 25-pound can of blasting powder into his cousins' kitchen, not realizing at the time what it was. He placed some of the powder on an unlighted oil stove and touched a match to it "to see if it would burn."

Apparently a spark from the powder flash flew into the uncovered keg and the 25 pounds of explosive materials ignited and exploded. The three children, their mother and the Amery girl, a playmate, were in the kitchen at the time. The blast let go with a terrific roar and Ritchie, after escaping

Spray MINOR BURNS WITHIN 15 MINUTES with Gebauer's TANNIC SPRAY

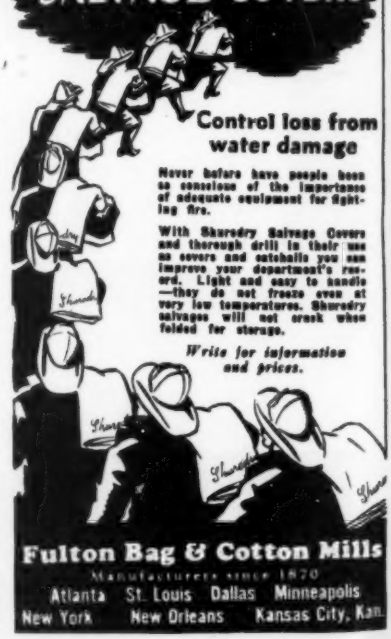
The element of time is of first importance in the successful treatment of burns. If a burn is treated within 15 minutes after it occurs, the probability of blister formation is reduced to a minimum. But if time is wasted before proper treatment is started, serious complications and infection may follow.

When using Gebauer's TANNIC SPRAY in the treatment of burns, the factors involving time-loss are eliminated. This preparation is a stable solution of tannic acid ready for immediate use. Packaged in a sturdy amber bottle having an automatic dispensing cap, which permits the projection of the solution in the form of a fine jet stream. Upon application the solvent evaporates rapidly, covering the burn with an evenly applied, dry and flexible film of tannic acid.

Gebauer's TANNIC SPRAY is a practical *first* first-aid treatment for first, second, and small area third degree burns. Write for literature.

THE GEBAUER CHEMICAL CO.
9410 St. Catherine Ave. • Cleveland 4, Ohio

USE Shuredry SALVAGE COVERS



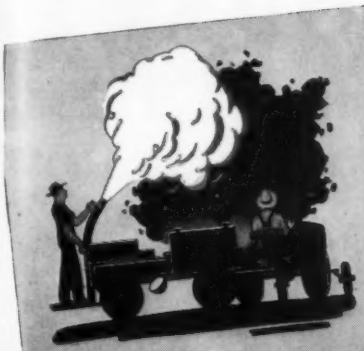
Control loss from water damage

Never before have people been so conscious of the importance of adequate equipment for fighting fire.

With Shuredry Salvage Covers and thorough drill in their use as severe and catchable you can improve your department's record. Light and easy to handle—they do not freeze even at very low temperatures. Shuredry salvages will not crack when folded for storage.

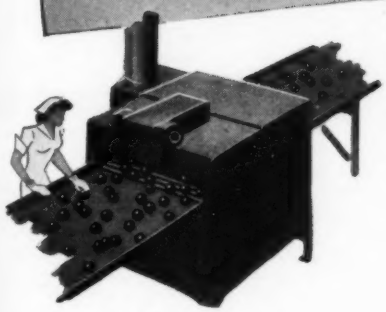
Write for information and prices.

Fulton Bag & Cotton Mills
Manufacturers since 1870
Atlanta St. Louis Dallas Minneapolis
New York New Orleans Kansas City, Kan.



THE FARMER KNOWS US
as makers of Bean Orchard and Crop Sprayers, Niagara Insecticides, Dusting Machines, Peerless Pumps and other equipment for growing & harvesting.

THE FIGHTING FORCES KNOW US
as creators*, designers and builders of "Water Buffalo" amphibians and other equipment for the armed forces.
*In cooperation with the Bureau of Ships, U.S. Navy.



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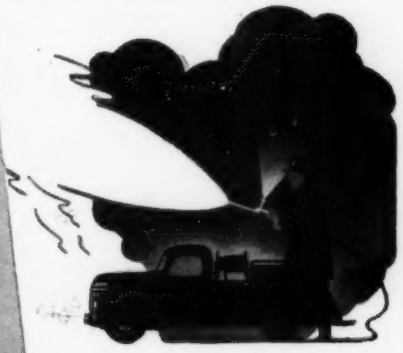
Shippers, Dealers and Retailers know us as developers and producers of protective processes, such as Hypo-Clor Sterilizing Bath and Flavorseal Protection, that prolong the fresh life of fruits and vegetables.

FOOD PACKERS KNOW US
as the creators and builders of equipment for processing, canning and packing nearly every type of food, including over 70% of the nation's evaporated milk.



THE FIREMAN KNOWS US
as the originators and builders of FMC Original Fog Fire Fighters, revolutionary equipment which produces a dense fog for extinguishing fires almost instantly.

CITY ENGINEERS KNOW US
as the designers and manufacturers of Peerless Pumps—Turbine, Hi-Lift and Hydro-Foil—supplying water for city systems, and industrial and farm uses.

WHO IS Food Machinery Corporation?

Food Machinery Corporation is many things to many people. Ten manufacturing divisions with fourteen major factories located from coast to coast make hundreds of different products in diversified fields. But *all* FMC equipment is known alike for its excellence of design, its superior engineering and mechanical stability. At the root of this reputation is an exceptional "know-how" that is the result of more than sixty years of building specialized equipment and of solving difficult engineering problems for the food industry.

Write on your business letterhead for a free copy of the full-color booklet "Amphibian Diary," telling the story of the FMC "Water Buffalo."

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"Y BONDS TO HELP WIN THE WAR . . . TO PREVENT DICTATORSHIP FROM INVADING OUR SHORES . . . TO KEEP SAFE OUR CONSTITUTIONAL FORM OF GOVERNMENT AND OUR BILL OF RIGHTS

WENTWORTH
FIREMAN'S UNIFORM CAPS
Union Made **Prompt Delivery**

No. 342

Wentworth Fireman Caps are made of the Highest Quality Standard Materials available and by the Best Skilled Union Craftsmen in all the New and Standard styles. Our 49 years of experience and skilled workmen guarantee you AMERICA'S GREATEST CAP VALUE in all WENTWORTH FIREMAN CAPS.

No. 441

Write direct for latest circular and prices or see your local dealer.

WENTWORTH-FORMAN CO., INC.
578b Washington St., Boston, Mass.
Manufacturers
Fireman Cap Specialists for Over 49 Years

VALVES
HYDRANTS
AND WATERWORKS ACCESSORIES

M & H products, including pipe line accessories, are well known for high quality of material and expert workmanship. They are made according to standard specifications and have been used for many years throughout the country. Write for Catalog No. 34

M&H VALVE
AND FITTINGS COMPANY
ANNISTON, ALABAMA

through a window, returned and carried one child out.

Harold Amery, father of Elizabeth Amery, appeared on the scene and carried out the other youngsters. Their clothes were in flames. Mrs. Ritchie made her way out of the house unaided.

According to information gathered by Sheriff Franzoni, the blasting powder was left on the veranda by the family which occupied the tenement before the Ritchies, over a year ago. Members of the FairHaven Fire Department battled the flames until midnight and were handicapped by a strong wind.

THOMAS F. MAGNER.

Charleston Fire Fighters Hold Parade

On Tuesday, October 10, the Charleston, S. C., Fire Department and the volunteer fire fighters of the U. S. Coast Guard staged a unique parade in the historic old "City by the Sea" as part of Fire Prevention Week program. The chief feature was an old-fashioned steamer dating back to 1907, a part of the Charleston Volunteer fire fighters. The old steam engine bore a sign, "I'm still doing my part—how about you?" Barney Robinson, supervising engineer, was in charge of the steamer and had it puffing furiously.

Officials in the parade included Fire Chief Norman G. Olsen, Thomas A. Brookbanks, commander of the Charleston Volunteer fire force and Chief Edward M. Ward, in charge of the Coast Guard detail.

D. C. SPENCER.

Jefferson County Firemen Meet

Members of the Jefferson County Volunteer Firemen's Association elected Nelson Longtin, Clayton, president of the group at the annual convention in Dexter, N. Y., Sept. 15. Mr. Longtin, former chief of the Clayton department, succeeds John W. Jones, Philadelphia.

Other officers named were Fred Estes, Alexandria Bay, first vice-president; Chief Max Doane, Dexter, second vice-president; Herman Woefle, Lafargeville, treasurer, and Jack Farrell, Dexter, secretary. The 1945 convention will be held in Brownville.

From across the border nearby came delegates from the Eastern Ontario Volunteer Firemen's association, including firemen from Nepear, Rideau, Smith Falls, Carleton Place, Altmont, and Gananoque.

SANFORD D. DEWEY.

Indiana Fire Chiefs Elect Officers

At the annual meeting of the Indiana Fire Chiefs Association held at Fort Wayne, September 27-29, Forest Laufraw, Chief of the Goshen, Ind., Fire Department, was elected President.

Other officers chosen were: Chief Harry Fulmer, Indianapolis, first vice president; Chief Bradley Stinson, Anderson, second vice president; Chief Archie McCabe, Muncie, re-elected as secretary; Chief George Hanen, New Albany, re-elected as treasurer; and Robert F. Hamm, of the Indiana Inspection Bureau, named to the new office of chaplain. Frank L. Orr, Terre Haute, continues as business manager.

QUAKER
FIRE HOSE

Chemical Hose
Forestry Hose

Suction Hose

QUAKER QUALITY

QUAKER RUBBER CORPORATION
Main Office & Factory:
PHILADELPHIA 24
New York 7 - Chicago 16 - Cleveland 15
Houston 1
--Western Territory--
QUAKER PACIFIC RUBBER COMPANY
San Francisco 5 - - Los Angeles 21

THE *New* WHEAT *Rechargeable Spotlight*

MODEL 158

2500 FOOT BEAM
25000 CANDLE POWER
1000 HOURS OPERATION

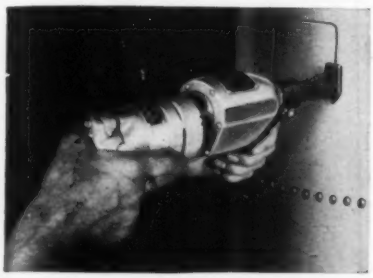
Critical Materials Reduced to a Minimum to Insure Availability

FEATURES

★ Positive "non-spill" Construction
★ Less expensive Operation than dry cells
★ Free use of Hands. Light carries conveniently on Shoulder Strap
★ Weighs only 92 ozs. complete
★ Simple to Charge and Water No need to take Lamp apart
★ Light can be Focused and Directed as Desired

WRITE FOR COMPLETE DETAILS
KOEHLER MANUFACTURING COMPANY, INC.
MARLBORO, MASSACHUSETTS, U.S.A.

THE NEW
SAW-GUN
SHOULD BE STANDARD
ON ALL
FIRE-FIGHTING EQUIPMENT



Here's Why..!

The Saw-Gun is a portable power-saw that will quickly cut into all metals, wood and other materials. Quickly attaches to any electric or air drill, and may also be propelled by a flexible shaft. Insert ordinary hack-saw blade for cutting.

Firemen equipped with this handy tool can now get at the fire quickly. Can cut openings into obstructions regardless of their material. Cuts rapidly through heavy gauge steel. No need to waste precious time removing steel gratings . . . cut them out of the way with this amazing portable tool. Does away with slow, cumbersome, dangerous gas cutting torches, together with their long lines of hose and heavy tanks.

Progressive fire-chiefs who know the importance of getting at a fire *fast*—who want a quicker means of getting to entrapped persons, will add the Saw-Gun as standard equipment.

ONLY $42.00
QUICK SHIPMENTS ON AA-5 PRIORITY OR HIGHER

Sold on Money-Back Guarantee

SEE YOUR JOBBER or WRITE DIRECT
Mid-States
EQUIPMENT COMPANY
Saw-Gun Division
2419 S. MICHIGAN AVE., CHICAGO 16, ILL.

Chief William M. Mullins Recuperating

Friends of Chief William M. Mullins of the Roanoke, Va., Fire Department, will be glad to know that he is showing improvement after three major kidney operations. He is still in Jefferson Hospital in that city, but his doctors say that if nothing unforeseen develops, he will be up and around soon.

Chief Mullins has been with the Roanoke Fire Department for thirty years, and is this year serving as first vice-president of the Southeastern Association of Fire Chiefs.

Chief "Dan" Tierney Recovering

Chief Daniel B. Tierney of the Arlington, Mass., Fire Department, and Secretary-Treasurer of the International Association of Fire Chiefs, is now recovering at his home after a severe bout with pneumonia, his many friends in the fire service will be glad to learn.

Ex-Chief A. J. Foley Dies

Arthur J. Foley, Sr., former Chief of the Portland, Conn., Fire Department, was found dead in his room at the Hotel Kingsbury, Waterbury, on October 7. A heart attack was given as the cause of death. The deceased was at the head of the Portland Fire Department for fifteen years and also served for some time as a constable and dog warden.

In 1942 he served as a foreman in construction work at an Allied base in Northern Ireland, returning to this country after spending 13 months there. He conducted an electrical contracting business. His wife, four daughters, three sons, one brother and three sisters survive him. THOMAS F. MAGNER

New London Hospital Threatened by Fire

Forty-nine patients, including several infants, were carried to safety when fire swept the upper portion of the Home Memorial Hospital at New London, Conn., on October 1 and threatened to destroy it. Loss to the structure was $30,000.

The fire was discovered at 2:08 P.M. and within eight minutes all patients and employes were out of the building. The evacuation was accomplished in an orderly manner and without undue excitement. The full firefighting equipment and manpower of the New London Fire Department, summoned on a general alarm by orders of Fire Chief Thomas H. Shipman, were aided by the Maritime Service, Coast Guard and Navy and auxiliary police.

The fire had its origin in the attic near a chimney in the main portion of the building and raced through the attic with incredible speed and attained considerable headway before being discovered by two hospital nurses at work in the sterilizing room on the third floor. The nurses, Jane Robertson and Barbara Porter, lost no time in spreading the alarm throughout the building and telephoning Fire Headquarters.

The telephone alarm brought the Pequot and Niagara Engine, Ockford Hose and Allen Hook and Ladder and Konomoc Ladder Companies. Realiz-

BIG BEAM
NO. 411
Powered by 6V 26 Amp. Storage Battery

This portable electric searchlight, carried in the hand or on a shoulder strap, lights up hazardous approaches, dark hallways, basements, structures, roofs—puts lights where you need it instantly—any time, anywhere. Projects a beam over 2500 feet, or by a quick change of a lens, delivers the same light over a wider area. Red, green and blue snap-on lenses available.

By means of a hold-down, Big Beam can be fastened securely to any flat surface for stationary lighting. The lamphead can be turned in any direction and stays adjusted. Well built for long and hard use, Big Beam is powerful, dependable, sturdy, shockproof. It is a big help to many fire departments. It can be to yours.

★ *Storage Battery or Dry Cell Models. Sold Through Wholesalers. Send for descriptive literature.*

U-C LITE MFG. CO.,
Dept. FE
11 E. Hubbard St., Chicago 11, Ill.
Gentlemen: Please send me without cost your circular matter explaining the features of the Big Beam.
Name .....
Address .....
City ..... State .....

Do as thousands of fire-fighters — Wear H. S. COVER'S famous Nod & Shake

FOG-PROOF GOGGLES

Not just ordinary gas-tight, smoke-proof goggles! Water placed inside lense keeps fog off indefinitely!

SAMPLE $1.65

H. S. COVER, 68 Chippewa St., South Bend, Ind.

ing the seriousness of the fire, Lieut. James A. Wood of Pequot Hose No. 6, while en route to the fire, resorted to the use of the radio and instructed the operator at Fire Headquarters to send in a second alarm. When Chief Shipman and Deputy Chief Lawrence E. McGrath arrived, orders were then sent in for a general alarm. Aiding the first and second alarm due companies were the Thomas, Northwest and Naumeaug Engine Companies.

The fire served as a good test of New London's $447,000 water distribution system improvement project which was put in operation during the past summer upon recommendation of fire underwriters.

THOMAS F. MAGNER

Captain Raimund W. Haupt Dies

Raimund W. Haupt, former Captain in the New York Fire Department, died on September 8 at his home in Staten Island.

Captain Haupt was associated with the fire service for thirty-four years, joining the Young America Hose Co., No. 6, of Poughkeepsie, N. Y., on August 4, 1890. He was elected captain in 1894 and served as such until he was appointed fireman in Truck 3 of the New York Fire Department in 1903. On November 25, 1910, he was made lieutenant and on December 25, 1913, captain, serving in that capacity until his retirement on May 6, 1924. In May, 1923, he was awarded the Henry D. Brookman medal for bravery by Mayor Hylan of New York City.

Manufacturers' Announcements

J. A. Sargent with Ansul Chemical

John A. Sargent, formerly assistant manager of the Menominee and Marinette Light & Traction Company, a subsidiary of the Wisconsin Public

J. A. Sargent

Service Corporation, has been appointed Planning Engineer for Ansul Chemical Company and its Dugas Division. He began his new duties on September 18, and has been assigned the task of Coordinating the thoughts, ideas and activities of the various Ansul departments.

Mr. Sargent was with the Wisconsin Public Service Corporation since 1920, except for a period of four years, 1924 to 1929, during which time he attended the University of Wisconsin where he obtained a degree in electrical engineering.

PARADISE BLANK-IT SPRAYS

have these features

APPLICATION
VOLUME
AREA
RANGE
& LOW
OPERATING PRESSURE

Covered by U. S. Patents 1922259; Re. 19913; 2284443; 2292794; 2254751.

PARADISE MFG. CO.
3165 S. PENNSYLVANIA ST.
INDIANAPOLIS 44, IND.

"Half-Mile-Ray"

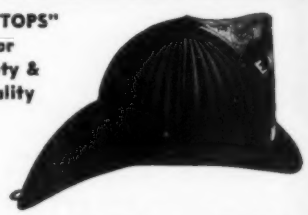
PORTABLE EMERGENCY LIGHTS

STORAGE Battery and Dry Cell Outfits for all types of service. Also Spotlights for cab mounting on vehicles.

Send for Catalog "F"

THE PORTABLE LIGHT CO., INC.
216 William St., New York 7, N. Y.

"THE TOPS" for Safety & Quality



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WINTER EQUIPMENT

Let us outfit you, from head to foot. Secure the advantages of buying ALL you need from ONE source, with the guarantee of satisfaction of America's oldest firm of firemen's outfitters.

Helmets, leather, aluminum, and plastic, with cushion lining and Winter earlaps.
Warm Turnout Coats and Trousers
Rubber Coats Face Shields
Regulation felt lined fire Boots
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Department Record Forms

Write for Catalog 310

CAIRNS & BROTHER
Outfitters to Firemen Since 1836
444 LAFAYETTE STREET, NEW YORK 3

Portable Electric Hand Searchlight

"Big Beam" No. 411 portable electric hand searchlight, made by U-C Lite Manufacturing Company, will project an intense beam of more than 2,500 feet or, by means of a snap-on lens, give the same volume of light over a wide area. Powered by heavy-duty, shockproof 6 volt storage battery, rechargeable from and A.C. charger, D.C. line or light plant. The lamp-head may be turned in any direction and will stay adjusted. The unit may be carried either by hand or with a shoulder strap.

"Big Beam" Hand Searchlight

The light has a wide range of uses—in the armed forces and in industry generally, for maintenance, repair, plant protection, fire, police and street departments, public utilities, construction and telephone work, etc.

Folder Available on Katolight Generators

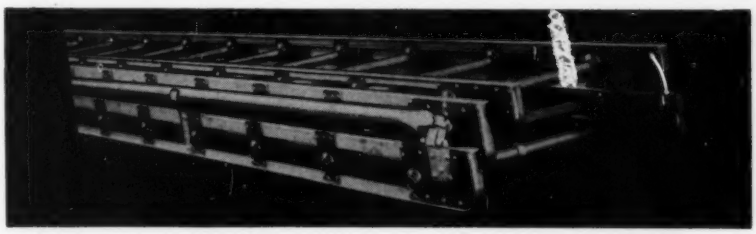
A four-page folder is now available describing the Katolight revolving field generator. Copies of the folder may be secured by writing to Kato Engineering Company, Mankato, Minn.

Dugas Corporation to Become Division of Ansul

Ansul Chemical Company, Marinette, Wis., announces that its owned and operated subsidiary, Dugas Engineering Corporation, will become the Dugas Division of the parent company. The change, which conforms with Ansul's post-war development and future planning program, encompasses the complete operations of Dugas. It also makes possible a measure of simplification and standardization.

Homelite Units Aid in Hurricane

Out of all the reports of emergency work done by Homelite portable pumps and generators during the last east coast hurricane, Nelson Thompson, Vice President of the Homelite Corporation, relates a most unusual case.



Again Available

STRONG-LIGHTWEIGHT

Aluminum Ladders

★ Reallocation of aluminum by the government permits the manufacture of a limited number of fire department and industrial ladders. The three section, aluminum, heavy duty extension ladder illustrated is type 3 EL. Its unusual strength combined with remarkable light weight makes it one of the most popular fire ladders ever designed. Because of these characteristics . . .

. . . a 65 foot ladder of this type can easily be raised by four men and a supervisor — an impossible feat with ladders not made of aluminum.

FOR GREATER SAFETY AND EASE OF HANDLING

The locks operate automatically at any desired point during ladder extension. The rope and flexible cable are arranged for simultaneous automatic extension of both flies.

★ ★ ★

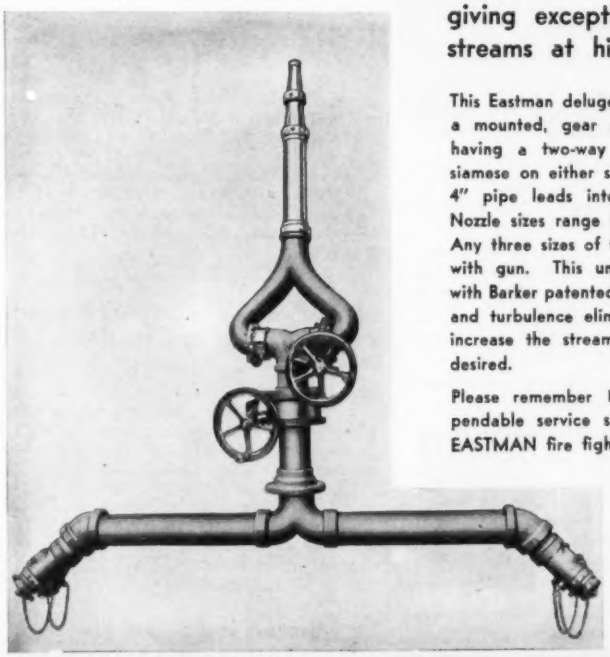
Write for information on standard sizes and aluminum ladders built to specifications

Aluminum Ladder Company

200 Carbis Street
Worthington, Pennsylvania

Low Friction Loss

giving exceptionally solid streams at high pressure



This Eastman deluge gun is shown as a mounted, gear controlled nozzle, having a two-way automatic valve siamese on either side of apparatus. 4" pipe leads into main 4" riser. Nozzle sizes range from 1⅜" to 2". Any three sizes of tips are furnished with gun. This unit can be fitted with Barker patented stream perfector and turbulence eliminator which will increase the stream size to 2½" if desired.

Please remember 120 years of dependable service stand back of all EASTMAN fire fighting products.

SAMUEL EASTMAN COMPANY, Inc.
CONCORD, N. H.

"ALL AMERICAN CHOICE"
INVINCIBLE NOZZLES
PREPARE — PROTECT

Portable equipment is the watchword of today.

Buy—

INVINCIBLE NOZZLES

and enjoy the benefits derived by experience of the pioneers in the nozzle field.

Fig. 403

F. N. McINTIRE BRASS WORKS
Successors to A. J. Morse & Son, Inc.
BOSTON, MASS.
1837 -- 1941

"The Superior"
A MODERN and PROVEN
LIFE NET

The SUPERIOR LIFE SAVING NET is stronger than any other, because of the tested breaking strength of 1,800 lbs. of each individual rope.

The direct pull shock absorber system eliminates all friction and its greater resiliency provides for a safer, easier landing.

Made of Chrome Molybdenum steel, the frame may easily be folded for storage within a few seconds.

For the utmost in LIFE SAVING VALUE . . . "SPECIFY SUPERIOR".

For ECONOMY, have your old net converted into a "SUPERIOR".

Other
SUPERIOR Products:
Training Nets and Structures
Ladder Belts
Life Size Training Dummies

William Moeller
Designer
Consultant

SUPERIOR FIRE EQUIPMENT CORP.
235 E. 42nd St. New York, N. Y.

Suffering from a cardiac ailment, a Greenwich, Conn., woman was confined to an oxygen tent at the time the hurricane struck. With the power out, due to the storm, the oxygen tent was unable to operate until a Homelite gasoline engine driven generator was rushed to the woman's home. With the generator in operation, enough current was available to operate not only the motor blower in the oxygen tent, but also lights and two refrigerators in the woman's home.

Handy Decals for Fire Extinguishers

A set of three decalcomanias for first aid fire extinguishers has been made up by Walter Kidde & Company, Inc., manufacturers of fire protection equipment. These decals, which can be transferred to the extinguisher itself or to the wall behind its station, indicate briefly and clearly the fires for which that particular unit is suitable, and those on which it should not be used.

Decals for Marking Fire Extinguishers

Correct marking of extinguishers with these decals will direct the untrained or excited employee on the spot, prevent loss of time during the all-important first moments after the outbreak up fire, and help to avoid misuse of equipment.

A limited number of sets will be supplied free, and larger quantities may be had for a nominal charge, on request to Walter Kidde & Company, Inc., New York 6, N. Y.

N. Y. Firemen to Inspect Hyrants Before Cold Weather Sets In

Due to the manpower shortage it may not be possible for New York firemen during the forthcoming cold season to conduct a daily inspection of hydrants as required by existing rules and regulations.

Company commanders have been requested to begin at this time an intensive inspection of every hydrant for the purpose of reporting and repairing hydrants found defective.

Missouri Inspection Bureau Honored

The United States Coast Guard Security Shield of Honor award was presented to the Missouri Inspection Bureau on November 16 at ceremonies held in the Hotel Statler, St. Louis.

BOYER

Headquarters for
"DEPENDABLE"
FIRE APPARATUS and FIRE DEPARTMENT SUPPLIES

★

FORTIFY FOR FIRE FIGHTING

★

BOYER FIRE APPARATUS CO.
LOGANSPORT INDIANA

A Gift Suggestion

If you have in mind a Christmas remembrance for your friends in the fire service why not make it a year's subscription to FIRE ENGINEERING?

There is hardly a gift that would be appreciated more—and it carries its friendly greeting the year round.

Just send us the names and addresses (we'll check promptly to see if they are already on our list) and then about two weeks before Christmas a copy of the December issue will be sent to each along with a letter stating that a year's subscription is being entered with your compliments and the season's best wishes. We'll bill you at $2.50 each. That's simple enough, isn't it?

Better attend to this now, before the rush starts.

Subscription Department
FIRE ENGINEERING
24 W. 40th St., New York 18, N. Y.

Questions and Answers

(*Continued from page* 808)

2. Using the same 45-pound hydrant, a pumper is discharging in excess of 1000 gallons per minute. Is it correct to allow 15 pounds inlet pressure to supply the pump, leaving 30 pounds to overcome friction loss from the hydrant to the pump? Can I assume a drop in pressure in the hydrant of at least 11 pounds. In other words will you still be able to supply 820 gallons per minute from each outlet at this reduced pressure, 24 pounds? S. P.

Answer: In example 150, page 133 of "Fire Service Hydraulics," we have two pumpers instead of one, supplying the water tower. Therefore the discharge from each would be less than 600 gallons per minute.

(As no size of pumper is specified, it is satisfactory to assume that it is a 1250 gallon pumper, a commonly used size, and in this case the two pumpers could easily supply the 1189 gallons per minute.)

Where you have 45 pounds hydrant pressure, and if the hydrant is attached to a large size main, the hydrant will easily supply the demands in the problem given above. As a matter of fact, tests conducted on fire hydrants in the business section of a large city showed that pumpers could take over 3,000 gallons of water per minute from a hydrant. Of course, it all depends upon the supply, that is, the sizes of mains and their lengths, which feed the hydrant.

If the hydrant pressure is 45 pounds, a residual pressure of 30 pounds is not unreasonable to expect. This would allow 15 pounds for a drop in pressure within the hydrant.

Invitation for Gold Medal Sent to Press and Radio

Leading newspapers and radio stations will receive recognition for outstanding public service in fire prevention and protection during the calendar year 1944, according to the announcement of W. E. Mallalieu, General Manager of the National Board of Fire Underwriters. Invitations for the fourth annual National Gold Medal Awards competition are being mailed to 11,000 daily and weekly newspapers and 900 radio stations throughout America.

The awards, in the form of $500 gold medals, will be presented to the newspaper and to the radio station judged to have performed the most effective work in encouraging "fireproofing" of its community during 1944. The official entry form is to be returned promptly, followed after the close of the year by supporting material such as clippings, letters, documents, programs, recording and other pertinent data. The final closing date for submission of supporting data is February 15, 1945.

A Board of Judges composed of representatives from the newspaper and radio professions and fire prevention authorities will select the winners.

MEN! PROMOTE YOURSELF!

FIREMEN'S CERTIFIED TRAINING TEXTS ON IMPORTANT FIRE-FIGHTING SUBJECTS

This inexpensive set of text books, compiled by W. Fred Heisler, are official training manuals in 15 states. Study them for promotion! Up-to-date, easy to read and fully illustrated, the COMPLETE SET IS ONLY..... **$2.40**

- ☐ Unit #1 Forcible Entry and Minor Extinguishment
- ☐ Unit #2 Ladder Practices
- ☐ Unit #3 Hose Practices
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- ☐ Unit #5 Fire Stream Practices
- ☐ Unit #6 Fire Apparatus Practices
- ☐ Unit #8 Rescue Practices
- ☐ Unit #10 Inspection Practices

New Firemen Need Them!

Inexperienced men filling in due to shortages caused by war can learn quickly and thoroughly all fire-fighting fundamentals. Municipal and industrial plant libraries cannot afford to be without them!

These books are available as a set, or can be ordered separately. Additional texts: "Fire Service Practices"—an introductory manual for small departments—30¢; "Elementary Science Applied to the Fire Fighting Service", $1.00; "Principles of Electricity Applied to the Fire Fighting Service", $1.00.

Prices are postpaid anywhere within continental U. S. A. Elsewhere, postage extra. Send check with order, or shipments can be C.O.D. Be sure to specify quantity, unit numbers and titles wanted.

ORDER TODAY FROM A. & M. COLLEGE BOOK STORE STILLWATER, OKLAHOMA

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933, OF FIRE ENGINEERING, published monthly at New York, N. Y., for Oct. 1, 1944.

State of New York }
County of New York } ss.:

Before me, a Notary Public in and for the state and county aforesaid, personally appeared I. H. Case, who, having been duly sworn according to law, deposes and says that he is the business manager of the FIRE ENGINEERING and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are: Publisher, Case-Shepperd-Mann Publishing Corp., 24 West 40th St., New York 18, N. Y.; Editor, Fred Shepperd, 24 West 40th St., New York 18, N. Y.; Managing Editor, Fred Shepperd, 24 West 40th St., New York 18, N. Y.; Business Manager, I. H. Case, 24 West 40th St., New York 18, N. Y.

2. That the owner is: Case-Shepperd-Mann Publishing Corp., 24 West 40th St., New York 18, N. Y.; I. H. Case, 24 West 40th St., New York 18, N. Y.; Fred Shepperd, 24 West 40th St., New York 18, N. Y.; Karl M. Mann, 24 West 40th St., New York 18, N. Y.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above giving the names of the owners, stockholders, and security holders, if any, contain not only a list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

I. H. CASE,
Business Manager.

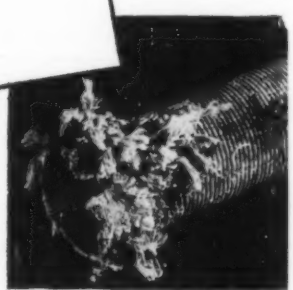
Sworn to and subscribed before me this 28th day of September, 1944.

[Seal]

WILLIAM H. TOPHAM,
Notary Public.

(My commission expires March 30, 1945.)

"FORMULA X"
PROTECTS HOSE AGAINST
MILDEW



With ordinary care, mildew and rot will not cause disintegration like this to Eureka.

Fire hose, no matter how carefully dried and hung on racks, is subject to the "sneak attack" of an invisible enemy —the fungus growth called mildew.

Eureka Fire Hose, however, is safeguarded for life against this destructive foe. Long, painstaking research developed an exclusive treatment —"Formula X" which repels all known forms of mildew.

Like balanced-weave and smooth-interior filler-ply, mildew proofing is one of the special features of this time-honored hose...features which make Eureka famous for quality performance and economy.

If you have not yet received the valuable and important Eureka wall chart, "Directions for Care of Fire Hose", request a copy or copies today.

"For greater protection to life and property"

EUREKA FIRE HOSE

Division of United States Rubber Company

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NOVEMBER, 1944

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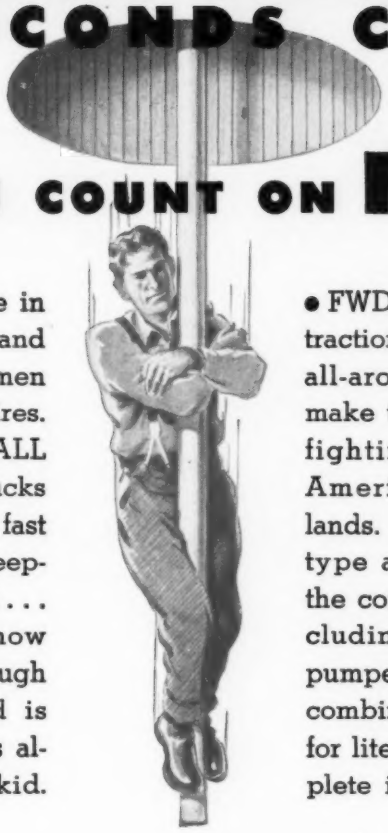
WHEN SECONDS COUNT . . .



YOU CAN COUNT ON FWDs

• Down-the-pole gains time in manning the apparatus . . . and FWDs gain time in getting men and equipment safely to the fires.

• With driving power in ALL wheels these modern fire trucks start fast, travel fast, work fast on fires . . . they climb steepest grades without hesitation . . . no mud is too deep, no snow too heavy, no going is too tough to stop them . . . no road is too slippery . . . traction is always "sure-footed", non-skid.

• FWDs have the speed, power, traction, ruggedness, safety and all-around dependability that make them the preferred fire-fighting trucks throughout America and many foreign lands. You can count on every type and size of fire truck in the complete FWD line . . . including rotary or centrifugal pumpers in triple or quadruple combinations, aerials, etc. Write for literature that includes complete information.

THE FOUR WHEEL DRIVE AUTO COMPANY • Clintonville, Wisconsin

Canadian Factory: KITCHENER, ONTARIO

FWD Model KH5, 500 gallon pumper, serving the city of Anchorage, Alaska.

BUY MORE WAR BONDS

STER—SAFER *Four-Wheel-Drive* FIRE APPARATUS

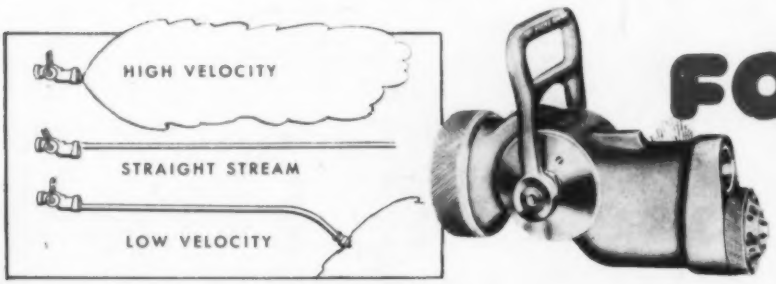
The effect of *Waterfog* on fire is so spectacular that even seasoned veterans find it hard to believe the amazing results. Huge blazes seem literally to put themselves out as if by a giant's breath.

By magic, you might say, until you recall the first principles of the chemistry of fire. Then you realize the remarkable action of *Waterfog* is so extremely simple you wonder why it should have required a war to bring about the present widespread use of a method so fundamental.

Waterfog is created by the breaking up of water into uniform, *spherical* particles. These are of scientifically determined size to float into convecting air currents with intense penetration, instantly diluting burning vapors and destroying combustion. The total surface area of water thus applied is so greatly enlarged its cooling effect is magnified up to 3000%,—and the lightning rapidity with which the small particles of *Waterfog* convert into steam quickly smothers the fire by forcing out air and oxygen.

Both high and low velocity *Waterfog* is created at normal pressure by the impinging action of patented FOGNOZLS, originated and perfected by the Fog Nozzle Company after 20 years of practical research. Important data on this new development in firefighting will be sent upon request.

WATERFOG HAS 4 BIG ADVANTAGES IN FIREFIGHTING: Rapid Extinguishment • Personnel Protection • Reduced Water Damage • Low Cost Protection



ALL PURPOSE

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